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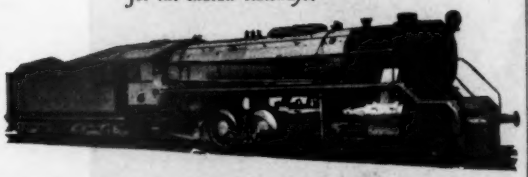
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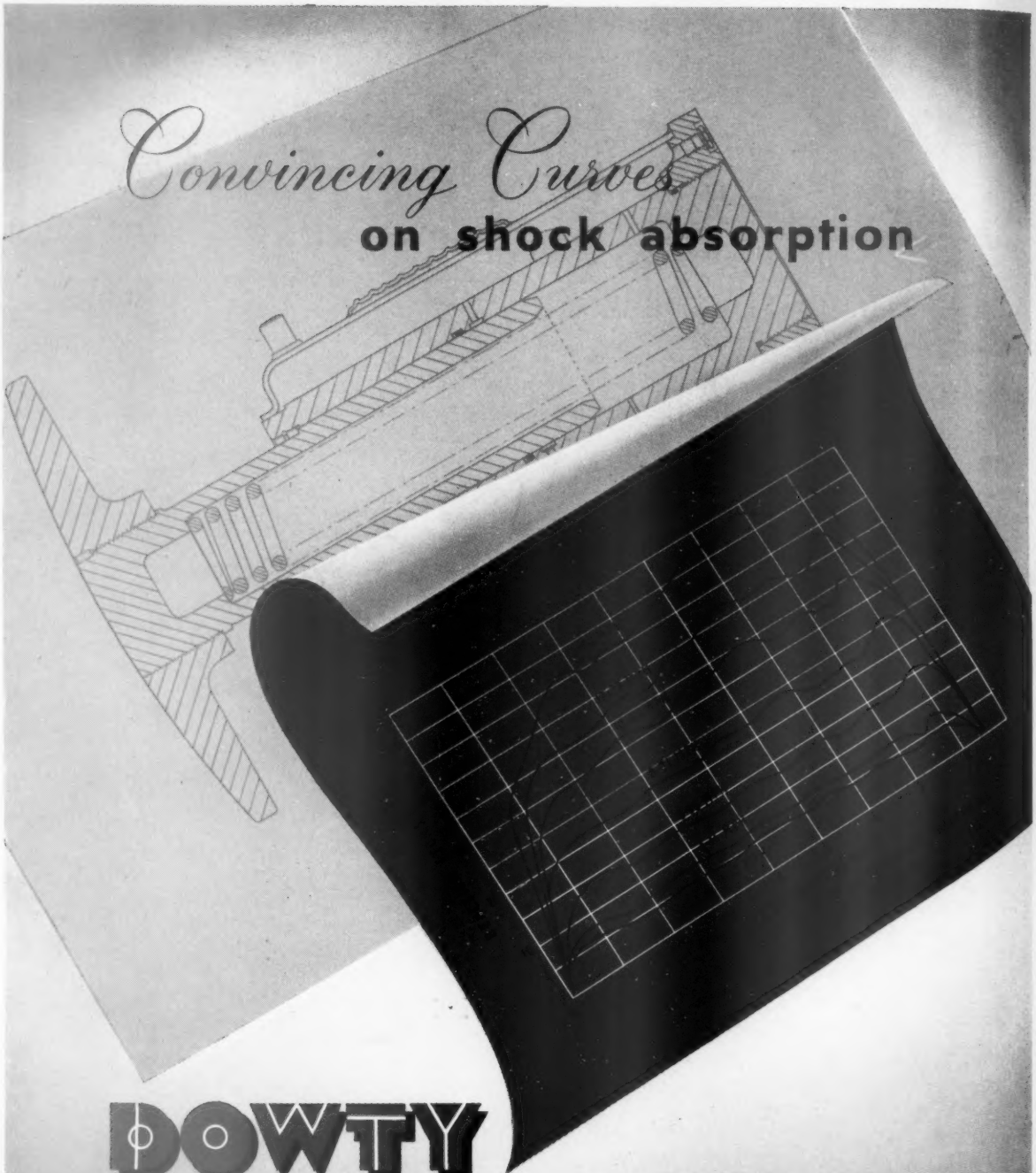
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Grounds for Negotiations

AS a result of discussions between the British Transport Commission and the Government, a statesmanlike and far-sighted plan put forward by Sir Brian Robertson, Chairman of the Commission to Mr. Harold Watkinson, the Minister of Transport & Civil Aviation, has been accepted by the Government. There is every indication that an active and forthright attack will be made on the pressing problems facing British Railways today. Details of the Commission's proposals for economy in operation and the efficient use of manpower, and the Government's reply are given in full elsewhere in this issue. It had already been agreed by the Prime Minister that the Government were prepared to re-examine the modernisation programme immediately and to give support to the reductions in unremunerative services provided that the Commission and the three railway unions were prepared to implement the necessary economies. As a result the Commission has been enabled to offer an unspecified wage increase about October and to meet the unions in July to reassess the position. In setting out its economy proposals the Commission has rightly dedicated itself to a two-part plan: first to restore the level of current net receipts, and then to make possible a review of railway wages and salaries later in the year. The steps involved are very wide and embrace a reduction in train mileage, wagon repairs, maintenance expenditure, shipping services, and staff, as well as the elimination of unremunerative services. Selective increases in capital investment could, in the Commission's opinion, make an improvement in net revenue in the next 12 months. The Government's acceptance of this view, and its willingness to authorise additional investment of £25,000,000 over the two years 1958 and 1959 is a firm indication of its determination to assist the railways in every possible way, especially in view of the action taken in September, 1957, to restrain inflation and control the level of public investment; measures that were reaffirmed in the Budget three weeks ago. The manner in which these vitally important wage negotiations are being conducted on both sides encouraged hopes, as we closed for press, of a realistic outcome to a matter which has assumed national significance.

The Late Mr. W. P. Allen

MANY will mourn the loss of Mr. W. P. Allen, Manpower Adviser to the British Transport Commission, whose death at the age of 69 is recorded elsewhere in this issue. Perhaps no more fitting tribute can be paid to Mr. Allen's memory than to quote Sir Eustace Missenden's words of October, 1948, when the first of the class "A1" Pacific locomotives was named *W. P. Allen*. Sir Eustace then said: "Mr. Allen's career is an example of the success which a railwayman of ability can achieve by his natural qualities. He joined the old Great Northern Railway as an engine-cleaner in 1907 when he was 19. He became a fireman in 1913 and in 1924 was promoted to engine-driver. Later, his organising ability and his interest in the welfare of his fellowmen led him to a succession of high offices in the Associated Society of Locomotive Engineers & Firemen." Mr. Allen's service with the Railway Executive and, later, the British Transport Commission was greatly valued and he was popular with his colleagues and among all ranks of railwaymen. His death so soon after the announcement of his impending retirement will be widely regretted.

Mr. F. A. Pope

MR. F. A. POPE, whose retirement from the British Transport Commission is recorded on page 545 of this week's issue, has had an extremely varied and interesting transport career. Predominantly, his service has been in connection with commercial matters, first on the L.M.S.R., of which he became Vice-President, and since 1951, as a Member of the B.T.C. Nevertheless, his knowledge and experience have been gained in Britain, Nigeria, India, Ireland and, during the last war, on the Continent. Early recognition was given to his qualities of leadership: he was loaned to the Indian Government in 1932 and 1933 to guide inquiries toward the achievement of greater railway efficiency, and his success is reflected in his return to that country in 1944 as Regional Port Director at Calcutta. Northern Ireland also recognised his ability—his appointment as Manager of the Northern Counties Committee at Belfast was echoed seven years later by his designation as Chairman of the Northern Ireland Road Transport Board and of the Ulster Transport Authority. In 1955, after relinquishing his full-time membership but remaining a part-time member of the B.T.C., Mr. Pope became an additional director of the John Bull Rubber Co. Ltd. The following year he was appointed Chairman.

Calcutta Suburban 50-Cycle Electrification

CONVERSION at 25 kV., 50 cycles, and ancillary works are reported to be making good progress on the broad-gauge suburban line between Calcutta Sealdah and Ranaghat, 46 miles, of the former Eastern Bengal Railway, now in the Sealdah Division of the Eastern Railway of

India. Proposals for electrifying this section were made many years ago; but it is only some 18 months since it was decided to use the a.c. system. Surveys are in hand for conversion of the Bongaon, Diamond Harbour, and Budge Budge sections. Of these lines, only that to Ranaghat, which before Partition in 1947 was part of the main line to North Bengal and Assam, is believed to have been seriously considered for electrification in recent years, on economic grounds, before the decision in favour of 50-cycle traction. Much re-signalling and civil engineering work will be necessary to deal with increased traffic at Sealdah terminus, where there is already congestion at peak hours with the existing steam service. Construction is being considered of some new lineside stations.

Overseas Railway Traffics

RAILWAY receipts of South African Railways & Harbours in the week ended March 1, 1958, were £2,907,461 compared with £2,788,718 in the corresponding week of 1957. Receipts in general continued to rise above the previous year's figures throughout March, and at March 29, aggregate receipts from April 1, 1957, were £144,816,207 compared with £138,873,932 in the corresponding period of 1956-57. Harbour and Airway receipts also showed a considerable improvement on the previous year's figures with Airways aggregate receipts from April 1, 1957, some £1,750,000 up on the corresponding figures for 1956-57. Railway operating revenues of the International Railways of Central America for March amounted to $1,416,890, a decrease of $159,955 compared with March, 1957. Net income for the month was $50,478 ($183,662). The Midland Railway of Western Australia road and railway receipts for February were £A67,916 (against £A69,121 for February, 1957). Aggregate receipts for the eight months July-February were £A560,503 (£A614,549 in 1956-57).

Electrification in South Africa

AN outstanding feature of the South African Railways £37,000,000 electrification programme, described elsewhere in this issue, is that work is at present in progress in several parts of the system. Work on the 121-mile Vereeniging-Kroonstad section in the Orange Free State was started soon after the line had been doubled, and is the latest project to be commenced. It is also the first line to be electrified in the province. The programme in Natal has reached an advanced stage, and the end of this year should see the completion of the work. The province will then have 400 route miles of electrified line. The work in hand in the Cape Province includes the largest single stretch of electrification ever to be undertaken by the South African Railways, Touwsrivier to Beaufort West, 179 miles. Completion of this section of main line should bring about a great improvement in the movement of traffic between Cape Town and Johannesburg. A total of 302 route-miles is being electrified in the Transvaal with major schemes in the Pretoria and Johannesburg areas. All these schemes are on the 3,000-V. d.c. system.

Manning of Canadian Pacific Diesels

IN contrast with the agreement dealing with the manning of diesel and electric locomotives on British Railways, successfully concluded at the beginning of the year, the similar move on the Canadian Pacific Railway has met with severe opposition from the Firemen's Union. The findings of the Kellock Royal Commission are that firemen are not needed on main-line freight and shunting diesel locomotives of the C.P.R., not only from a point of view of safety but also because of the potential annual savings; these are estimated at $5·7 million in 1956 based on the amount of diesel working then in effect, and $11·6 million in 1961 with full diesel operation. The Commission points out that on many European railway systems, such as those in Holland, Switzerland, France and the United Kingdom, besides a number of railways in North America, diesel operation without a fireman on certain duties is accepted practice. It adds that an essential difference between the proposed operation of diesels on the C.P.R. and the European practice of one-man operation, is that the removal of firemen from C.P.R. freight diesels would still leave two men in the cab, the "engineer" and "head end trainsman." The C.P.R., anxious to implement the recommendations, has given notice to the Firemen's Union that it will remove firemen from such duties from May 11. The reaction of the Union, which does not accept the findings of the Commission, has been to threaten to withdraw its labour from that date.

Smoking in Trains

THREE factors now exist which bear on the problem of providing smoking compartments in trains, and on the legislation as to smoking, which dates from the earliest days of railways in Britain. Pressure ventilation and improvements in ventilation generally do much to mitigate any nuisance which might be caused to passengers who dislike tobacco smoke; compartment coaches are being replaced by diesel railcars on many lines, and also by open coaches in some locomotive-hauled trains; and there is greater tolerance on the part of non-smokers, though to many smoke is distressing or harmful for medical reasons. It seems unlikely that any attempt will be made to alter the law. The difficulty of apportioning the accommodation in railcars and other open vehicles between smokers and non-smokers is great. A reminder of the strictness of the present law was made during a recent successful prosecution for smoking in a non-smoking compartment in a Southern Region train. According to the by-law, there must be no smoking whatever in a compartment designated as non-smoking, even although none of the occupants objects. The law in most Continental countries is less strict and less often enforced.

Use or Lose

BECAUSE of the relatively small area of the State, most of the hauls possible on the Victorian Railways are short by Australian standards. This no doubt is one reason for the intensive road competition, which has caused a drop in traffics on several lines. The Victorian Railways Public Relations & Betterment Board is conducting a campaign to bring home to the public the realities of the situation: if some branches are not used enough to enable them to avoid a loss, they may have to be closed; that would be detrimental to many interests, including those of the consignors of wheat and livestock, who rely on seasonal use of the railways. Amongst publications by the Board is a leaflet, with the curt title "Use or Lose." A drawing depicts a section of track being lifted by a crane, with the wording "This could happen if you don't use it." The warning concludes: "Unneeded trains are costly. The money used to run them can better be utilised in improving services that communities in other parts of Victoria appreciate and are prepared to support. A district in which a line is closed to traffic loses prestige and declines in importance."

Progress on the Ganges Bridge

LATEST available news of the Ganges Bridge near Mokameh is that the river at its lowest level is tending increasingly to silt up the north channel, the south or main stream flowing between piers 2 and 6 numbered from and near the south bank. No damage during the monsoon or falling river is reported. About 5,500 tons of fabricated steel had been received at Hathidah on the south bank of which some 2,500 tons had been erected; the fourth main span had been completed by the end of March. Progress of this cantilever erection was at a steady rate of a span a month, a speed likely to be maintained unless weather conditions or shortage of materials intervenes. The construction of the approach viaducts, underbridge and culverts is continuing satisfactorily, as also is that of the staff quarters, transhipment sheds and other buildings. It is hoped to open the bridge and all ancillary works during 1959.

Modernisation at Keymer

THE introduction of a relay interlocking panel, illustrated in this issue, at Keymer Crossing is a reminder that the junction close by, between the main Brighton and Eastbourne lines, saw one of the first applications of Saxby's original equipment. That inventor, whose grave is a short distance away in Wivelsfield churchyard, had his first workshop in the neighbourhood before establishing in 1863, in association with Farmer, the factory, well known for some 40 years, at Kilburn, in north-west London. The old very high junction box figured in the fatal collision in fog on December 23, 1899, between the Pullman express from Brighton and the boat train from Newhaven, stopped in Wivelsfield station. Another box, of ordinary height, built many years later, was abolished in 1932 when colour-light signalling came into use on the line to Brighton and the working became concentrated in the crossing box and controlled from the ordinary lever frame, now superseded by the panel.

Parliament and the Gowers Report

A MOTION calling upon the Government to make further provision for the health, welfare and safety of railway workers in accordance with the Gowers Report is due for debate in the House of Commons today (Friday). It stands in the name of Mr. Francis Noel-Baker, Socialist Member for Swindon, and it is only coincidental that the matter is to be raised when the transport industry is in a state of crisis. A similar motion has been on the order paper throughout the life of the present Parliament but only now has one of its sponsors drawn premier place in the ballot for Private Members' Motions. All the same, its supporters consider that it should be debated at this time to focus attention on the working conditions that still prevail in some of the old railway buildings, dating back over a century, and particularly in locomotive sheds and works. It is also contended that with a cutback in the modernisation plan it is necessary to put forward the workers' viewpoint that their claims on it for the planned improvement in facilities should not be sacrificed.

The Commission has not found it possible to carry out the recommendations voluntarily and the Government has not legislated to require it to do so. Frequently Government spokesmen have expressed the intention of so doing but lack of Parliamentary time has precluded further action. Before the dissolution of the last Parliament the Government gave an undertaking that a Bill would be drafted and during the debate on the Queen's Speech at the beginning of the present Parliament Sir Anthony Eden promised a measure in due course. The then Minister of Labour, Sir Walter Monckton repeated the undertaking, and further statements were made anticipating provision for legislation in the next Queen's Speech. Since then two Speeches have been made from the Throne without reference to it.

If there were any matter of principle involved this lack of progress would be understandable, but in view of Government statements this does not appear to be the case. The recommendations broadly were reasonable enough and the Commission does not oppose them in substance; it has always maintained that the laying down of minimum standards is unnecessary since the consultative machinery is adequate to ensure that railway workers enjoy satisfactory working conditions. In its view, as stated before the Committee in evidence, it was unnecessary for them to be laid down by statute. It admitted, however, that there was no obligation on the part of the Commission to carry out the decisions of the consultative machinery. The Commission's reluctance to accept statutory obligations similar to those applying to certain other industries under the Factories and Shops Acts is resented by the railwaymen and any grounds for grievance on their part is to be regretted in the light of the present situation. The Commission's attitude is that it is willing to act in the spirit of the recommendations but resists being compelled to do so. The Gowers Report recommended that the Factories Acts should apply to locomotive sheds where conditions resembled those in factories and were particularly dirty. Similar regulations to those applying to office workers generally were to be required for railway offices. The chief recommendation was that legislation no more burdensome than that applicable in similar conditions should apply to the half million railway workers outside the scope of existing legislation.

Since the war much has been achieved in improving working conditions on the railways, and now not a very great deal would be needed to bring them up to the requisite standard. Presumably a reasonable period would be granted to bring conditions into conformity with the statutory requirements, and, in any case, much is provided for under the modernisation programme. As new marshalling yards, goods sheds, loco depots and stations are built, or old ones reconstructed, the facilities provided are brought into line with modern ideas. At this late stage in the current Session the Government is unlikely to introduce fresh legislation of this kind and the debate will show whether the Commission will express willingness to raise its sights somewhat and work towards bringing the railways into line with the rest of industry.

Indian Railways Budget, 1958-59

THE salient figures in the Indian Railways budget estimates for the year ending March 31, 1959, indicate considerable further expansion. It is expected that gross traffic receipts will total Rs. 407·48 crores (Rs. 1 crore = £750,000), ordinary working expenses Rs. 268·35 crores, net miscellaneous expenditure Rs. 16·99 crores, appropriation to depreciation reserve fund Rs. 45·00 crores, and payments to worked lines Rs. 0·22 crores, the outgoings thus totalling Rs. 330·56 crores and the net revenue Rs. 76·92 crores. After payment of Rs. 49·58 crores as the dividend to Government general revenues, there should therefore be a net surplus of Rs. 27·34 crores.

The bases for these expected figures include the present trend of passenger traffic leading to an assumed revenue of Rs.124·73 crores; other coaching earnings have been placed at Rs. 24·65 crores. The estimate of goods earnings is Rs. 250·50 crores based on the present 12½ per cent surcharge and anticipated increase in traffic. This increase includes 12,000,000 tons of additional traffic—raising the total to 145,000,000 tons—mainly from the expansion in the steel industry and additional coal raisings.

It is proposed to spend some Rs. 3¼ crores more on a larger programme of open-line works chargeable to revenue, and heavier capital expenditure on works will involve an increase of about Rs. 5 crores in the dividend payable to general revenues. The Rs. 27·34 net surplus will be credited to the development fund.

Improvement in the supply of materials is mentioned in the budget speech as already increasing the tempo of works expenditure, all new constructions and other large works benefiting from it and being in full swing. There were 140 miles of new line opened to traffic during the past year, including two sections of the Khandwa-Hingoli metre-gauge link and the Kottayam-Quilon section of the Quilon-Ernakulam construction (opened throughout earlier this year) 13 miles of doubling were also completed. At present 500 miles of new lines and 800 miles of doubling are in progress.

The estimate for expendiure on works, machinery and rolling stock in the budget year totals Rs. 260 crores, including Rs. 88 crores for rolling stock, Rs. 5 crores for machinery, Rs. 29 crores for new construction and restoration of dismantled lines, Rs. 33 crores for track renewals, and Rs. 105 crores for open-line and other works. The two new steel plants at Rourkela and Bhilai are expected to go into production in the budget year and existing steel plants will substantially increase their output. Coal raisings are expected to increase from last year's 43,000,000 tons to 47,000,000 in 1958-59. The complementary additional railway facilities are well in hand.

Two new lines are included in the budget-year programme, the 100-mile Robertsganj-Garhwa Road exten-

sion of the Northern Railway, estimated to cost Rs. 17 crores, and the 40-mile Muri-Ranchi connection on the Eastern Railway, costing Rs. 5·9 crores. The former is important as an alternative route from the Barkakana coalfields to north India and as reducing the ever-increasing traffic pressure on that great rail centre, Moghalsarai, and also because it will tap the Rihand Dam area. The Muri-Ranchi connection is part of the Chandrapura-Bondamunda project to serve the new steel plants mentioned.

The total length of the various sections of line mentioned in the budget for electrification is 1,062 miles with an estimated cost of Rs. 75 crores. As it has been decided to adopt the 25 kV. a.c. 50-cycles single-phase system of electrification, a system entirely new to India, the French National Railways have been appointed technical associates to advise on all problems, and supervise actual works. Of the above large mileage, priority has been given to (*a*) the Howrah-Moghalsarai section of the Eastern Railway, and (*b*) Asansol to Tatanagar and Rourkela and Rajkharswan to Barrajamda, on the South Eastern Railway. Orders for the first 110 a.c. locomotives have been placed, and tenders have been invited for the supply and erection of the overhead equipment for these sections. The total electrification expenditure allowed for in the budget is Rs. 16·29 crores. Difficulty in obtaining power supplies is holding up the other most important Igatpuri-Bhusawal electrification on the Central Railway Bombay-Delhi main line.

Of the 2,500 miles of surveys for new lines in hand a year ago, 1,600 have been completed, but as limitation of funds has reduced the prospects of further construction beyond that already approved by the Planning Commission, no more new surveys are being undertaken at present.

The expected out-turn of new rolling stock in the country during 1958-59 is 258 locomotives, 1,500 coaches, and 16,800 wagons. Apart from a few narrow-gauge locomotives no rolling stock is being ordered from abroad.

Performance of Prototype Deltic Locomotive

PUBLISHED so soon after the placing of an order by British Railways for 22 Co-Co 3,300-h.p. Deltic locomotives from the English Electric Co. Ltd., the report of performance and efficiency tests of the prototype locomotive will be read with considerable interest. The details are given in Bulletin No. 19 issued by the British Transport Commission, which describes the results of trials conducted by British Railways.

The tests which form the subject of this Bulletin were carried out to establish the power output and fuel consumptions over a wide range of working, and to check the manufacturer's theoretical performance characteristics.

The locomotive, described in our issue of October 21, 1955, weighs 106 tons, all of which is available for adhesion. With a total power of 3,300 h.p. supplied by two Napier Deltic two-stroke, 18-cylinder, opposed-piston engines, it has a designed maximum rail tractive effort of 52,500 lb., and a continuous effort of 29,000 lb. at 35 m.p.h. The resultant power: weight ratio is 72 lb. per h.p. or 32 b.h.p. per ton; this is a remarkable figure for a single-unit locomotive, which is in fact the most powerful in the world. The main generator has a maximum continuous rating of 1,100 kW. at 1,500 r.p.m., with a maximum current of 3,000 A. The six axle-hung traction motors have a continuous rating of 535 A., 600 V., 400 h.p. Two stages of automatic field weakening are arranged for the motors, and the gear ratio of 59:21 permits a maximum road speed of 105 m.p.h.

The actual combined output of the two engines is determined by the position of the driver's controller through air pressure actuators operating on the engine governors. The controls are duplicated to permit the locomotive to be driven from either of the two cabs. A torque regulator in the generator field circuit of each power unit ensures that the main generator field excitation is automatically regulated by the engine governor to match the generator loading to the available engine horsepower. Although in normal service the locomotive is designed to employ both power units together, changeover switches are provided so that either power unit can drive all six traction motors.

The test programme was designed to cover the outputs obtainable with two engines and one engine separately. The range of power output with two engines was investigated by conducting tests at eight different settings of the controller, corresponding to a number of nominal engine speeds, ranging from idling to maximum.

So far as practicable, each of these conditions was maintained for the whole of a particular test run. At a fixed controller setting, engine r.p.m., fuel consumption and b.h.p. remain sensibly constant, and all test measurements were made under these conditions.

Because of the exceptionally high power output of the locomotive, it was found impracticable to examine its performance completely during service trials of this nature, and tests with the London Midland Region mobile test plant accordingly were proposed. A test programme was arranged using the mobile test plant over the Carlisle-Skipton route, and the tests were conducted by the L.M.R. locomotive testing section in co-operation with the English Electric Co. Ltd. during August and September, 1956.

At certain of the engine speeds, corresponding to the higher power outputs of the locomotive, it was found impossible to cover all road speeds with any one combination of testing units and several runs were therefore necessary to complete the characteristic.

Results given in the bulletin show that the rail tractive effort of the locomotive at maximum engine output was in close agreement with the designed values. A maximum drawbar tractive effort of 45,550 lb. was recorded; this was sustained for two minutes without slipping and represents an adhesion value of 19 per cent. This effort is just under the maximum allowable figure as governed by the overload relays which limit the total traction circuit current.

When working at maximum power with both engines, the rail horsepower was sensibly constant at 2,650 h.p., with a maximum power from both engines of 3,250 h.p. This represents an efficiency of 81 per cent; losses due to auxiliaries, main generators and traction motors being around 5, 6 and 8 per cent respectively. The maximum drawbar h.p. at constant speed on the level was 2,580 at 40 m.p.h. falling to 2,410 at 70 m.p.h. The corresponding values of overall thermal efficiency were 27·5 and 25·7 respectively. The importance of correctly matching the engine r.p.m. on the two engine governors is stressed in the report. If this is not done, appreciable loss in power output is likely to occur to unloading of one of the engines at speeds in the vicinity of the two field changes, as in fact occurred on the tests.

To demonstrate and verify the locomotive characteristics obtained from constant speed tests with the mobile testing units, a load of 642 tons, 20 coaches, was hauled with the locomotive working at maximum power with two engines. An almost constant actual drawbar horsepower of 2,200 was sustained for long periods. The average speed on the 15-mile gradient of 1 in 100 between Ormside and Ais Gill was 56 m.p.h., the minimum speed being 50 m.p.h. For this particular test run the average speed for the round trip was 56·2 m.p.h., and total fuel consumed for a return run of 165 miles was nearly 210 gal. This gives an average of 1·25 gal. per mile or 0·8 m.p.g.; at this consumption the 800-gal. fuel load would be enough for some 630 miles. The values of drawbar tractive effort at constant speed on the level derived from this test, agreed closely with those established from the previous tests.

When working at maximum power with one engine, the drawbar horsepower varied from 1,270 at 25 m.p.h. to 1,100 at 60 m.p.h. which is considerably less than half of the power obtained with two engines at similar road speeds. Two reasons for this are that the locomotive resistance and auxiliary power together absorb a greater proportion of the engine output than in the case of two-engine working, and that traction motor efficiencies are lower because of operation at half voltage. This underlines the need to work diesel locomotives as hard as possible to obtain the highest operating economies.

Exceptional smooth-running and freedom from vibration, and very little maintenance work throughout the tests is

reported as far as the engines are concerned. They are, however, noisy when running at idling speed, and this was objectionable when standing in stations. The report does not indicate whether this was mechanical, or possibly exhaust and pressure-charger noise; if it were the latter, suitable silencers might be a solution. The locomotive covered approximately some 5,000 miles while under test and no mechanical or electrical defects of any significance were experienced.

British Transport Commission Traffic Receipts

THE incidence of the Easter holiday this year and last vitiates true comparison between the fourth four-week periods of 1957 and 1958. During Period 4 of last year, petrol rationing resulting from the Suez incident was still in force, and a good deal of freight still was being consigned by rail which otherwise would have been moved by road; on the other hand, the prospect during April, 1957, of early de-rationing of petrol was causing a certain return of traffic to the roads.

British Railways merchandise and livestock traffic for Period 4 of the current year at £7,114,000 compares badly with last year's figure of £8,269,000. How far this represents a loss of traffic from rail to road it is impossible to say. The main reason for the decline probably is the shrinkage in the volume of goods being despatched by trade and industry. This seems to be borne out by the combined freight receipts for this period from the British Transport Commission inland waterways, road haulage, and shipping undertakings, which at £4,023,000 are less than £4,226,000 for the corresponding four week of 1957. Mineral traffic and collection and delivery service receipts also are reduced as compared with last year. C. & D. receipts might be expected to show the same general trend as merchandise; the fall in mineral traffics may well reflect reduced industrial activity. On the other hand, coal class traffic receipts for the period this year exceed last year's figure, as the result, presumably, of alteration in National Coal Board policy as to stocking and despatch.

—	Four weeks to April 20		Incr. or decr.	Aggregate for six weeks		Incr. or decr.
	1958	1957		1958	1957	
	£000	£000		£000	£000	
Passengers—						
British Railways ..	10,490	10,817	− 327	35,592	38,130	− 2,538
London Transport:						
Railways	1,743	1,776	− 33	7,136	7,420	− 284
Road services ..	4,370	4,607	− 237	17,534	18,517	− 983
Provincial & Scottish buses	4,257	4,349	− 92	16,361	17,169	− 808
Ships	431	357	+ 74	1,096	965	+ 131
Total passengers ..	21,291	21,906	− 615	77,719	82,201	− 4,482
Freight, Parcels & Mails—						
British Railways:						
Merchandise & livestock	7,144	8,269	− 1,155	30,087	36,489	− 6,402
Minerals	3,782	4,014	− 232	15,699	17,086	− 1,387
Coal & coke ..	9,857	9,285	+ 572	42,303	41,768	+ 535
Parcels, etc., by passenger train ..	3,918	3,911	+ 7	15,642	15,389	+ 253
Collection & delivery, etc. ..	946	1,039	− 93	3,852	4,279	− 427
Total freight British Railways	25,617	26,518	− 901	107,583	115,011	− 7,428
Others*	4,023	4,226	− 203	16,451	16,748	− 297
Total Freight, Parcels and Mails ..	29,640	30,744	− 1,104	124,034	131,759	− 7,725
Total	50,931	52,650	− 1,719	201,753	213,960	− 12,207

* Inland waterways, freight, road haulage, and ships

Cold weather in the Spring would account for the drop in British Railways passenger traffic receipts, despite some fare increases. The decline, as between last year and this, in London Transport Underground and road receipts follows a pattern apparent for some time, as does that in the receipts from the Commission's provincial and Scottish bus undertakings. Ships' passenger receipts continue at a considerably higher level than last year, with the increase presumably derived from Continental services.

PERCENTAGE VARIATION 1958 COMPARED WITH 1957

	Four weeks to April 20	20 weeks to April 20
British Railways—		
Passengers	− 3·0	− 6·6
Parcels	+ 0·1	+ 1·6
Merchandise & livestock	−13·9	−17·5
Minerals	− 5·7	− 8·1
Coal & coke	+ 6·1	+ 1·2
C. & D. services	− 8·9	− 9·9
Total	− 3·2	− 6·5
Ships (passengers)	+20·7	+13·5
British Road Services, Inland Waterways & Ships (cargo)	− 4·8	− 1·7
Road Passenger Transport, Provincial & Scottish	− 2·1	− 4·7
London Transport—		
Railways	− 1·8	− 3·8
Road services	− 5·1	− 5·3
Total	− 4·2	− 4·8
Aggregate	− 3·2	− 5·7

The Indonesian State Railways

EVENTS in Indonesia since the last war have not favoured railway operation or development, but despite these difficulties there has been some progress. We are indebted to Mr. Moh. Effendi Saleh, General Manager of the Indonesian State Railways (Djawatan Kerata Api) (D.K.A.) for some details. The system consists principally of 2,900 miles of 3-ft. 6-in. gauge in Java, and of 560 miles of 3-ft. 6-in. and 320 miles of 2-ft. 6-in. gauge in Sumatra. The railway network is much denser in Java, and in general it has been possible to effect more improvements to the railways in that island, which is economically more developed than Sumatra.

Economy in operation and the proximity of fuel have been the main reasons for substituting diesel for steam haulage as opportunity occurs. In 1951, 27 Alco-General Electric diesel-electric locomotives of the "C2C" class were ordered in the U.S.A., equipped with Alco V-12, 1,750-h.p. engines; these were put into service in 1953. In 1956, 35 more diesel-electric locomotives from General Motors were ordered, equipped with General Motors P-567 C, 950-h.p. engines; they entered service in April, 1957. In 1956, 60 diesel-hydraulic locomotives were ordered from Fried. Krupp G.m.b.H., half of 340 and half of 680 h.p.; delivery is stated to be in progress. The workshops at Jogjakarta are being converted into a diesel maintenance depot, and the shops at Manggarai have been completely re-equipped.

It has not been possible since the war to electrify further lines. The Djakarta suburban 1,500-V. d.c. electrification, which was carried out in the 1920s under Dutch control, has given very good service. Recently two rectifiers were ordered from the U.S.A. They are pumpless ignitrons with a capacity of 1,500 kW., 1,500 V. d.c., 1,000 A. An order has been placed in Switzerland for a rectifier with a capacity of 1,500 V. d.c., 700 A. About 80 per cent of the overhead equipment has been renewed.

The incorporation since the last war of 11 private railways into the State Railways system has caused many difficulties in adapting the various signalling systems. At present the D.K.A. is extending the manual block system. Re-equipment is being carried out as supplies of apparatus are delivered.

In civil engineering a major task performed in 1945 was the repair of war-damaged bridges, completed by 1955. Introduction of heavier motive power has necessitated strengthening many structures. Some iron bridges dating from 1890 have been replaced by steel ones. The present state of the track is stated by Mr. Saleh to be unsatisfactory. Re-ballasting, sleeper renewal, and relaying and welding of rails are being effected according to a programme. A good deal of construction continues of station buildings, goods sheds, staff quarters, and other premises.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

General Dictionary of Railway Terms

April 29

SIR,—As a member of the committee responsible for the compilation of the "General Dictionary of Railway Terms," published by the International Union of Railways (U.I.C.), and the subject of a notice in your April 25 issue, may I reply to the generous comment in your editorial note?

The surprising feature of the early meetings of the committee was the discovery that each of its members did not always understand the original term or expression in French to mean the same thing. Often, it was only after long discussions, illustrated by complicated drawings, that we arrived at an exact understanding of the particular item we were trying to translate. That this process was not always without difficulty is illustrated by the attitude of a colleague, who, on being informed that "Larousse" confirmed the interpretation placed on a phrase by the other members of the committee, retorted hotly "Then 'Larousse' is wrong"!

No doubt it was as a result of a similar discussion that the term to which you draw attention, *nombre de spires,* was translated as "number of windings," for "Larousse" does show that the word *spire* is derived from the Greek *speira,* meaning *enroulement,* which, clearly, is a "winding," and the German translation is equally *Windungszahl.*

Constructive criticism of the type made in your editorial, however, will be invaluable to the members of the committee, who already have begun compiling a list of the errors and omissions noticed in the first edition of the dictionary, to ensure that the second shall be as free from them as possible. At the same time, some deletions will undoubtedly be necessary, so as not unduly to increase the bulk of the dictionary; and certain terms cannot easily be translated into several different languages, particularly when they refer to persons or objects which have no exact counterpart in all the countries concerned.

Yours faithfully,

W. B. ADDINALL

U.I.C. Liaison Office, 3, Grosvenor Gardens, S.W.1

[The correct translation of *nombre de spires* surely is "number of turns"; the French equivalent of "number of windings" is *nombre d'enroulements.*—ED., *R.G.*]

Newhaven-Dieppe Service

March 28

SIR,—It is reported in the local Press that the General Manager of the Southern Region of British Railways, has stated that the keeping open of the Newhaven/Dieppe steamer service in the winter months is again under consideration. To those who pass through Newhaven on their way to London every day, and who also not infrequently use the steamer service itself, the first impression is of the extravagance of the manner in which the service is at present run. For 9½ months or so of the year, two ships are in service, and each one makes a single crossing each day; and then for the summer period of about 2½ months, all four ships allocated to the route are put into commission, and a night service is maintained in each direction plus an extra day crossing both ways at weekends.

The crossing takes only 3¼ hr., and yet for nearly 10 months of the year, of the four ships allocated to the service, only two are in commission, and they only steam 6½ hr. a day between them. Little wonder, therefore, that the service is reputed to be running at a loss, except in the summer, and indeed the present method of operation must involve one of the lowest rates of capital utilisation in the whole realm of sea transport.

Similarly, there seems to be gross extravagance in the boat train arrangements between Newhaven and London, for although, according to reports, the number of passengers varies between 30 and 50 each day in each direction for 9-10 months of the year, except for holiday weekends, a special boat train is provided, for which the minimum winter formation has been laid down as seven coaches and a Pullman, and one of the three electric locomotives of the Region is allocated to work it. Even 50 passengers, or a few more, can be accommodated quite comfortably in two coaches, and it is significant that on the French side the normal allocation in the winter months for boat passengers is three coaches only. Furthermore, these form part of a train that calls at Dieppe Town and Rouen on its way to Paris, and carries non cross-Channel passengers between these points. Thus the disproportionate amount of accommodation provided between Newhaven and London seems to be thoroughly wasteful.

It seems to be that the following points are worth considering, if it is really true that thought is being given to closing down the service in the winter months on account of cost:—

(*a*) As there are no connections guaranteed beyond Paris and London in either direction, the timings could be arranged so that one steamer could make an out and home passage in one day (compare certain of the Dover/Ostend workings); the boat trains leaving London one hr. earlier and Paris one hr. later approximately, than at present.

(*b*) The existing boat train could be replaced by a multiple-unit set of two or at the most four coaches.

(*c*) Stops might be made at East Croydon, Haywards Heath and Lewes, which, if well advertised, might bring patronage to the service without adding more than 5 min. to the schedule. Indeed, the overall journey time from the Sussex area to Paris would compare favourably with air travel via London Airport.

(*d*) If the present composition of the boat train must be maintained, the arrangements on the French side should be paralleled here, by the allocation of an appropriate portion of the train to cross-Channel passengers, and a stop made at Newhaven Town and possibly also Lewes, to provide a fast evening service to Croydon and London, which might well attract traffic if departure was about 5.50 p.m., i.e. 20 min. to half-an-hr. after the closing of the local factories.

(*e*) The arrangements suggested in paragraph (*d*) seem to work well enough between Waterloo and Southampton in connection with the Havre service, for the greater part of the year. Accordingly it would seem that the different methods of working are more a relic of the old L.B.S.C.R. and L.S.W.R. customs, which the present management does not want to disturb, illogical as it may appear.

The Newhaven-Dieppe service has always appealed mainly to travellers to whom cost is the prime factor, who are not particularly interested in having a special train with Pullman facilities, non-stop schedules to Newhaven and so on, and who are not tied down to the traditional schedule, which seems to be more a relic of a very different past, than a practical method of working under current conditions.

Further incidental savings would be made through the smaller train staff that would be necessary, for the electric locomotives have to be double manned. Furthermore, it can hardly be necessary to have a travelling inspector to deal with the handful of tickets involved.

Yours faithfully,

G. P. J. DE CLERMONT

Latchetts, Albany Road, Seaford, Sussex

INSTITUTION OF LOCOMOTIVE ENGINEERS: FILM EVENING.—An informal film meeting was held by the Institution of Locomotive Engineers on May 1 at the Institution of Mechanical Engineers, London. The three films shown were "Introducing work study," "Forgemasters in steel," and "High-speed flight: Part I—Approaching the speed of sound." The programme lasted about 1¼ hr.

THE SCRAP HEAP

Railway Rivalry on the Border

The utmost anxiety prevails as to the proceedings before the Select Committee on the railway bills, and the excitement appears to increase with every successive day. When the report of the first day's proceedings arrived on Wednesday evening, a public meeting was called by Bailie Scott to hear it read. In a few minutes the Town Hall was crowded by an audience who listened with breathless attention to the reading of the report.—*From "The Scotsman," April,* 1858.

Feudal Railway Station

Among the relatively few stations now remaining which were built mainly for the convenience of local magnates is Helens Bay, on the Belfast-Bangor line of the former Belfast & County Down Railway, now part of the Ulster Transport Authority system. With its propylaea of black granite adorned with pinnacles, battlements and many other imitation mediaeval military achitectural features, and Dufferin coat of arms, the gothic structure is said to have been built by the B.C.D.R. in honour of the first Marquis of Dufferin & Ava, whose seat, Clandeboye, adjoins Helens Bay. A private waiting room of pronounced Victorian style of decoration and furnishing was provided for Lord Dufferin and his guests, assuring seclusion from the ordinary travelling public; the latter, however, could never have been very many.

An amusing description of the station is given by Sir Harold Nicolson in "Helen's Tower," a study of Lord Dufferin. It would be interesting to know what other private waiting rooms survive. The best known probably are the Royal waiting rooms at Wolferton, on the Kings Lynn to Hunstanton line, the station for Sandringham. Those at the former G.W.R. terminus at Windsor, now named Windsor & Eton Central, have long since been converted to other uses.

"Insane Competition" (1858)

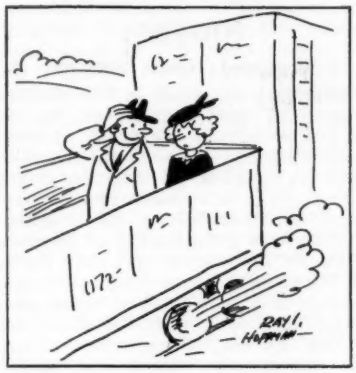
Such a corporation as the Great Northern Railway seems to us no more a private firm than the East India Company. When it was allowed to take everybody's land between King's-cross and the city of York, when it was selected in preference to all competitors to furnish communication with the metropolis to some half-dozen counties, when it was endowed with the privilege of passing by-laws and inflicting fines, it was on the understanding that its affairs would be conducted with common sense and honesty. It is for the world to say whether the insane competition of the last few weeks indicates the presence of either of these qualities. —*From "The Times," April* 23, 1858.

[Competition between the G.N.R. and L.N.W.R. had resulted in a London-Manchester 5s. return fare.]

Uses for Old Tunnels

That there should be no offers for a disused railway tunnel for sale near St. Etienne is not surprising. It is stated to be at too great an altitude to be suitable for growing mushrooms, the use so often suggested. Few mushroom growers in fact seem to think disused tunnels suitable, though not because of any chemical deposits on the roof or walls remaining from steam traction. Unless it can be found employment which ensures maintenance, a tunnel can become a dangerous nuisance. Part of the Dumpton Tunnel, on the London Chatham & Dover line between Broadstairs and Ramsgate Harbour was used in the late 1930s as the route of a scenic railway. During the last war it served as an air raid shelter, as did railway tunnels in many other parts of the world.

Grab me a Gondola?



Well, a gondola's a gondola aint it? Just imagine you're in Venice and save money.—From the "Baltimore & Ohio Magazine."

When Soft Voices Die . . .

(*Discontinuance of loud-speaker announcements at stations has been suggested as an economy measure.*)

Who is this Odysseus who would dare
Exclude our siren voices from the air?
Are we to wander round our railway station
Un-reassured about our destination,
We, who for years have listened for the word
That links all other information in accord,
Confirming everything the porter told us,
Likewise the timetable somebody sold us?
Perish the thought! Who is this rash rebuker,
Who worships at the shrine of filthy lucre,
Who advocates that we, whose every hour
Is regimented by some hidden power,
Should be bereft of vocal impetus
When we forgather at the terminus?
The stirring marches as the workers come,
The soothing strains as they go straggling home,
The velvet-voiced excerpts of information—
How can we do without these at our station?
The stoniest heart could scarcely leave us so,
Not knowing whence we come, or where we go!

A. B.

International Freight Working in the Far North



Swedish State Railways ore train hauled by "DM" class electric locomotive, at Riksgränsen, on the Swedish-Norwegian Frontier, en route to Narvik

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NIGERIA

Processed Timber Sleepers

Reference was made in *The Railway Gazette* of April 4 to the use for the first time of sleepers made of local timber, because of the recent establishment in Nigeria of two processing plants. In fact, a sleeper impregnation plant was installed by the Nigerian Railway during the last war at Zungeru, when the 150-mile section from Jebba to Minna was being relaid; this was done entirely with timber sleepers produced in Nigeria with the direct aid of the Forestry Department. Later the impregnation plant was moved down to Lagos (Apapa), where it impregnated sleepers supplied from the Sapele area.

INDIA

Diesel Railcars for Southern Railway

Twelve broad-gauge diesel railcars recently arrived at Madras harbour from Australia. The cars are 72 ft. long, with seating capacity for 82. Three are being put into service in the Bezwada division of the Southern Railway serving the branch lines connecting with Cocanada Port.

Calcutta Suburban Punctuality

Despite the difficulties caused by engineering and signalling work connected with electrification project on the Howrah-Bandel Section, the overall punctuality percentage of suburban trains on the Eastern Railway was maintained during 1957 at a level that did not compare unfavourably with those of the previous three years. Except for 1955, when 90.2 per cent of suburban trains on the Eastern Railway arrived at the right time, the over all punctuality of suburban trains was maintained in the region of 85 per cent. For the last few years the density of traffic, both goods and passengers, has been increasing.

Locomotive Imports

The Deputy Minister for Railways, Mr. Shah Nawaz Khan, recently stated in reply to a question in Parliament that during the last five years locomotives had been imported from Austria, Belgium, Czechoslovakia, France, Germany, Hungary, Italy, Japan, Jugoslavia, Poland, Switzerland, U.K., and U.S.A.

Survey of New Line in N.E.

The Railway Board has sanctioned a preliminary engineering survey for a 17-mile alternative line between Katihar and Barsoi on the North-East Frontier Railway. The line would be formed by conecting Kumudpur station on the Katihar-Singabad section to Barsoi on the main line. The new line would serve as an alternative to doubling of track between Katihar and Barsoi and would help to open up West Bengal.

CEYLON

Result of Working

The revenue earned by the Government Railways in the year ended September 30, 1957, exceeded that of the previous year by Rs. 3,161,965; however, working expenses showed an increase of Rs. 7,548,624 over the previous year, making a loss in working for the year of Rs. 15,101,022. The traffic returns from passenger, other coaching, and goods traffic, and the total revenue earned during 1956-57 were the highest ever recorded by the railways. The largest increase in expenditure was on fuel and coal due to increased cost of these items and extra train miles operated.

UNITED STATES

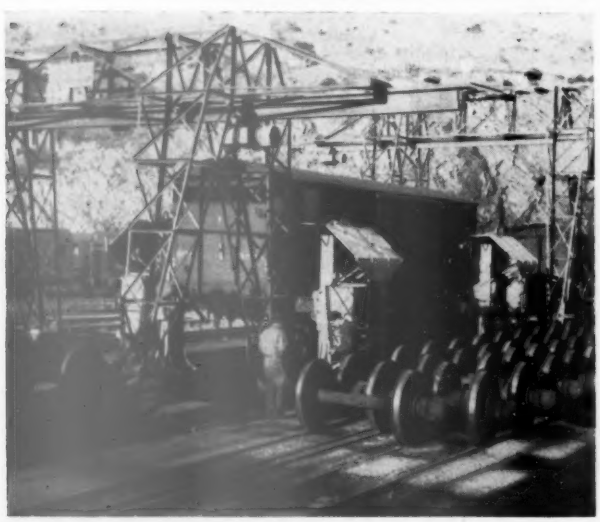
Aluminium Roofs for G.N.R. Cabooses

The Great Northern Railway recently brought into service 30 cabooses fitted in the G.N.R. shops at St. Cloud, Minn., with aluminium-sheet roofs. The roofs were manufactured from sheet by the Standard Railway Equipment Company. The roofs will be left unpainted and the reduction in maintenance costs is expected to be substantial.

Experimental Lightweight Trains

Some of the lightweight trains of various designs introduced during the past two years on U.S.A. railways in an endeavour to cut operating costs have not had the success expected. The Chicago, Rock Island & Pacific Talgo-type train, which for some time made two return journeys daily over the 161½ miles between Chicago and Peoria, as the "Jet Rocket" (replacing the previous "Peoria Rocket"), has now been rebuilt internally and transferred to Chicago outer suburban service. The similar train built at a cost of $1,200,000 for the Boston & Maine's Boston-Portland express service has also

Interchange of Wheelsets at Franco-Spanish Frontier



General view of plant at Cerbère for changing wheelsets between standard and Spanish (5-*ft.* 6-*in.*) *gauge*



Wagon built by Transfesa Company being lifted (*see our issue of June* 19, 1953)

been transferred to outer suburban service, working to and from Boston.

Both the "Aerotrains," built by the Electro-Motive Division of the General Motors Corporation, which have been working experimentally over the Pennsylvania, New York Central and Union Pacific Railroads and the National Railroads of Mexico, have returned to the makers.

The coaches of these two trains are supported on compressed air cylinders, for a cushioning effect at speed. No reasons have been made public for the lack of success with ultra lightweight stock, but it seems probable that with both the Talgo trains and "Aerotrains" lack of smoothness in running may have been responsible for lack of favour with the public.

FRANCE

Wagon Turnround Census

During the last two weeks of March, the S.N.C.F. carried out a form of census on the movements of 100,000 goods wagons. By sampling, it was hoped to follow the exact movements of a typical section of the wagon stock, and so find where time can be saved and turnround time reduced. The census applied to all wagons on the S.N.C.F., except for certain privately-owned vehicles. Each wagon concerned leaving any S.N.C.F. station between March 13 and 20, after either loading or unloading, was provided with a sampling card, yellow for loaded and pink for empty wagons. This card accompanied the wagon until it was unloaded or loaded and an entry was made at each point where it was re-marshalled or otherwise dealt with; after the final entry the card was sent to the district office. At a mechanised accounting centre, the information was put on to punched cards and summarised by means of an IBM 704 calculating machine.

WESTERN GERMANY

Federal Railway Orders for Henschel

Henschel Werke G.m.b.H., of Kassel, has announced that its production work is developing satisfactorily. Work on orders in hand will continue into 1959. The German Federal Railway has placed orders for locomotive boilers and for equipment of electric locomotives; the firm also is to undertake conversion of Bundesbahn coal-burning engines to oil burning, also locomotive repairs for the Bundesbahn.

EASTERN GERMANY

Trelleborg-Sassnitz Train Ferry

The Trelleborg-Sassnitz train ferry, linking Eastern Germany and Sweden, will run twice daily in each direction during the summer, one journey in connection with the Stockholm-Berlin-Warsaw service and the other for the Sassnitz Express, which will include a through sleeping car from Malmö to Munich.

POLAND

Narrow-Gauge Lines

There are some 2,400 miles of narrow-gauge railway in Poland, conveying mainly goods (largely potatoes and sugar beet), though there is a certain amount of passenger traffic. The gauges are 2 ft. 7 in. and 1 ft. 11½ in.

The Government recently decided to invest in modernisation of certain secondary railways. This year's plan provides for purchase of 435 four-axle coal trucks of 17·5 tons capacity, built in Poland. The Konstal works at Chorzów is to build two prototype passenger coaches, and next year the same works will supply 28 of these vehicles for service on various narrow-gauge lines. The Konstal works is also planning to produce diesel electric locomotives for narrow gauge lines, and should be able to provide 25 of these by 1960. The Wroclaw (Breslau) rolling stock works is building narrow gauge goods wagons.

It is intended that all narrow-gauge lines eventually shall be operated by diesel traction.

U.S.S.R.

Through Service to Bulgaria

Through dual-gauge sleeping cars are to be operated this summer, between Moscow and the Bulgarian Black Sea resort of Varna, via Ungeni, Bucharest, and Sofia.

NORWAY

Passenger Train Accelerations

The introduction of the "3600"-class diesel locomotives has enabled the State Railways to accelerate the day and night trains from Oslo to Bergen and Trondheim from the start of the summer timetable on June 1. The time saved ranges from 40 to 70 min. on the Trondheim section and from 40 to 60 min. on the Bergen line.

Publications Received

Von Salzburg nach Bad Ischl (*From Salzburg to Bad Ischl Spa*). By Joseph O. Slezak. Obtainable from the author at Boschstrasse 1/22/9, Vienna, XIX. 8 in. × 6 in. 20 pages. Illustrated. Price Austrian schillings 12.—This attractively illustrated booklet traces the history of the 41mile, 2-ft. 6-in. gauge Salzkammergut Lokalbahn (S.K.G.L.B.) running from Salzburg to the spa in the heart of the Salzkammergut mountain and lake district. The author describes the changes in the fortunes of the line, which once enjoyed a good traffic, and the circumstances leading to its closure in October 1957, and replacement by road services. This event caused much discussion throughout Austria, which may affect the future of other lines of this class.

British Transport Policy. By J. R. Sargent. London: Clarendon Press: Oxford University Press, Amen House, Warwick Square, E.C.4. 7½ in. × 5 in. 164 pp. Price 15s.—The author, who is a Fellow of Worcester College, Oxford, is concerned with economic, as distinct from technical, efficiency in the transport services. From his opening chapter on basic principles onwards, he presses the point that the true cost of transport to the user is not fully represented by the rates charged by rail or road transport undertakings. There may well be circumstances which make it cheaper to use the apparently dearer form of transport. He discusses the identification of costs and surveys costs and charges practices up to the present time. Special attention is given to the problems of indirect costs and unremunerative services. Whether one agrees with the author's conclusions and recommendations or not, this is a useful examination from outside the transport industry which should cause a good deal of thought and discussion.

Monsanto Dielectric Fluids: Aroclors Pyroclor.—Monsanto Chemicals Limited has produced a new booklet on its dielectric fluids, Aroclors and Pyroclor, and their use in capacitors and transformers. The 50-page publication includes many illustrations and graphs dealing with the properties of Aroclor dielectrics and their applications; the compatibility of Aroclor dielectrics with other engineering materials; and the handling of the fluids. An extensive bibliography is also included. Copies of the booklet are available to bona fide inquirers from Monsanto Chemicals Limited, Monsanto House, Victoria Street, London, S.W.1.

Danske Statsbaner 1957 (*Danish State Railways, 1957*).—This 14-page brochure issued by the Danish State Railways, Copenhagen, contains some excellent photographs of rolling stock, installations and activities of the system, with descriptions in English, French, and German. Mr. P. E. N. Skov, General Manager, contributes a short introduction.

Summer Holidays in Great Britain and Ireland.—The 1958 programme of Thos. Cook & Son Ltd. and Dean & Dawson, Limited, contains the usual rich variety of holidays in all parts of the British Isles, including the Channel Islands. From places in the Midlands and North, inclusive tours can be made during the summer season to Scotland by special trains arranged by the Creative Tourist Agents' Conference (C.T.A.C.) of which Thos. Cook & Son, Ltd. and Dean & Dawson, Limited, are members.

Seventeenth International Railway Congress

Maintenance and Repair of Electric Locomotives

Attention to methods of reducing wear in mechanical and electrical parts as a means of increasing period between overhauls

THE subject of Question 4 to be considered by the International Railway Congress in Madrid is a comparative study of the periodical maintenance and repair of electric locomotives. Mr. K. J. Cook, Chief Mechanical & Electrical Engineer, Eastern & North Eastern Regions, British Railways, has compiled the report on practice in English-speaking countries, those with British associations, or where British practices largely prevail. On the railways reviewed it appears that the average annual mileage for passenger locomotives is 70,000-80,000, with a maximum average for one large class of 112,000. For freight traffic the figure is about 50,000. The maximum speed for passenger locomotives reported is 100 m.p.h., but 75-90 is a more general range of maxima, and in most cases the designed maximum speed is above the permitted speed of the lines. General running speeds of passenger trains are 50 to 65, and of freight trains 30 to 35 m.p.h.

Wear of Rails and Tyres

It appears that in general a state of equilibrium has been reached in which the hardnesses of rails and tyres are equal, and probably this is desirable in order to reduce the adverse effects of one on the other. Reports indicate that the useful life of rails under electric traction is less than with steam traction, but a quantitative comparison is difficult as there is generally an increased service with electrification. The reduced life may be some 20-50 per cent. One administration reports that this reduction applies to rails on curves but not on straight. The limiting forms of wear vary as between batter at the rail ends, sidecutting, top wear, and in some cases corrugations, which may occur chiefly on sharp curves. In one case corrugations with a wavelength of 24-30 in. are reported to occur on sharp curves. When the depth of corrugations reaches $\frac{3}{16}$ in., rails are renewed.

Geographical circumstances vary widely between the railways replying to the reporter, and mileages run before tyres require reprofiling vary from 26,000 to 250,000. Curvature largely governs the amount of wear into flanges, and slipping is the greatest factor causing tread wear. There are indications that flange wear on curves can be reduced considerably by track oilers. Maximum flange wear generally occurs on the outer wheels of a locomotive, be they driving or carrying wheels.

General opinion appears to favour articulated bogies and it is claimed that reduced flange wear results from this provided that there is freedom of movement of the inner headstocks of the bogies and that there is a centering device on the coupling. It is clear that there is a strong opinion on the economic value of lubrication to reduce both flange wear and side cutting of rails. The use of rail lubricators is much more prevalent than flange lubricators fitted to locomotives. These may be automatic pump dispensers operated by the passage of a vehicle, and using grease, or the felt pad type feeding oil.

The effect of method of traction motor suspension on rail or tyre wear cannot be assessed as most administrations have had only nose-supended motors up to the present time. One administration reports that this method of suspension causes more tyre wear than when motors are frame-mounted. Release of the locomotive when requiring tyre turning only may be greatly accelerated by changing bogies. Worn flanges are not built up by deposition of weld metal and there are no reports of the use on electric locomotives of tyre-profiling machines for reforming tyres in situ under the locomotives. A machine for doing so is being installed by one administration.

Traction Motors

There is fair uniformity of detail between traction motors. The d.c. machines are generally four-pole, with four auxiliary poles; armature shafts run in roller bearings; supension bearings have a bronze shell with white metal lining (although one administration reports roller bearings on all locomotives); and lubrication of axle bearings is by oil with pads, waste packing or wicks. On the two a.c. systems covered by the report, the motors have 12, 16, 18 and 20 poles, with corresponding numbers of auxiliary poles and brushes. Brush holders follow a uniform pattern, adjustable only for radial gap, but brushes vary between solid and divided, with and without flexible connections. Arcing horns are being used increasingly to prevent damage to commutators by flashovers.

Traction motor weights range from 1·7 tons up to nearly 5 tons. Transmission is predominantly unilateral but there are also bilateral gears. Involute, straight and helical teeth are employed.

Short-period inspections (at intervals of from 15 to 45 days on different railways) are concerned primarily with brushes and commutators, the former particularly to ascertain that there is sufficient length remaining to enable the brushes to function satisfactorily until the next inspection. One railway carries out such an inspection daily and conducts a megger test at the monthly inspection, but this is not usual.

Periods between 3 and 5 years, and mileages between 46,600 and 400,000 are quoted as elapsing between overhauls. At these overhauls the motors are dismantled, inspected and tested, and cleaned out by vacuum and compressed air; while commutators are turned, varnished and baked. It is unusual for locomotives to be stopped specially for motor repairs, but these are carried out when repairs to other parts, such as tyres, are carried out.

Insulation is generally to Class B but there is a trend towards improved insulation using inorganic materials such as glass fibre.

While it is appreciated generally that it is detrimental to brushes to allow them to be very slack in the holders, only two cases are reported of limiting clearances, these being 0·01 in. and 0·012 in. These limits are only slightly greater than the initial clearance permitted by other specifications and it is thought that most railways permit at least double these figures. Commutators are not expected to require returning other than at heavy repairs, which are at mileages above about 300,000, and then the cut should not be more than 0·01 in. In one case, however, it is reported that this is done at three years and a mileage of 100,000, but this is on a suburban passenger service with very short distances between stops.

Ultrasonic Examination

Ultrasonic examination, as used increasingly for axles, is now being extended to armature shafts, supplementing visual and magnaflux methods. This is done at major overhauls, but it appears that the incidence of cracks in these shafts is almost unknown. Armature bearings, also, are dismantled for examination or replacement only at the heavy overhauls.

The use of keys in fitting pinions to armature shafts preponderates, and it is fairly universal practice to provide taper seats for the pinions. Opinion is divided as to whether it is necessary to keep pinions and gearwheels matched (the old pinion being retained, for the sake of matching with the gearwheel, when a motor has to be changed). Three administrations do not think this necessary, and a fourth has abandoned the practice as not worth the expense, and also because one spur wheel lasts the life of two pinions. It is unusual for traction motors to be changed at other than main works except in emergency.

Lubrication of armature bearings is by grease or high-viscosity oil. The greases used are generally composed of

refined mineral oil and soap or calcium.

There appears to be a little more variation in the lubricant for the axle or hollow shaft bearings of traction motors, ranging from greases composed of fine mineral oil and soap, and high-viscosity mineral oil, to a light machine oil.

Heavy gear compounds are used for gears and these are applied by very orthodox methods of grease guns. There have not so far been reports of the use of any radically new lubricants. Not much trouble is experienced from leakage of gear lubricants towards the armature shafts, but there are indications that it is liable to occur and provision and maintenance of effective seals are necessary.

Current Collection

Flashovers on electric locomotives appear to be rare, and when they do occur are generally caused by frost, snow, contamination by steam and exhaust from steam locomotives, or by lightning. Various devices are used, however, to assist current collection. These include measures to reduce the current collected per pan or pantograph, devices to improve contact between the collector and the wire, instructions to crews to limit current, and fine division of resistances to assist this. Arrestors are fitted on locomotives to limit surges caused by lightning. Separate wheel slip indicators are fitted in a few cases, but crews are also taught to deduce this condition from meter readings.

The experience of one railway is that copper pantograph strips wear too heavily, while carbon limits current collection, and sintered metal has therefore been adopted. On some other lines there is a tendency to use carbon, in one case impregnated with copper. Compound strip of copper and steel side by side has also been used with some improvement, and one report is to the effect that the application of molybdenum disulphide grease as an anti-scuffing medium has reduced wear of strips. Life of strips is reported as ranging between 10,000 and 30,000 miles. Generally pans are exchanged when the limit of strip wear is reached, but on one railway strips are renewed while pans are left in position.

Graphite grease is the general lubricant used—it is efficient and can be easily and quickly applied. At inspection, grease is added if required, and if the old grease has hardened, it is scraped away and replaced by fresh.

In one design of pan two copper strips running the length of the pan along the outer edges are augmented by two additional strips 18 in. long in the centre of the pan. The contact length is, therefore, four inches at the most used part of the pan. The outer edges of the long strips are provided with a radius.

At one maintenance depot the pantograph shop is on the first floor, above the roof level of locomotives, and a hand-operated platform can be traversed out from the shop, above the locomotives, to facilitate changing either pans or complete pantographs. Formation of ice on pans is not found to be a trouble, but it is considered that the grease used as a lubricant also acts as a preventative.

Maintenance Organisation

It is exceptional for a daily examination to be made other than that carried out by train crews on taking over or giving up a locomotive. Maintenance systems provide for (*a*) inspections, (*b*) general overhauls, and (*c*) an intermediate or lighter repair between (*a*) and (*b*) necessitated by attention to tyres and bogies. There is wide variety in the periods or mileages which elapse between these procedures, those between intermediate overhauls ranging from 10,000 to 200,000 miles, and between general overhauls from 46,000 to 400,000 miles. The general overhaul includes a complete strip-down of mechanical and electrical equipment and renovation or repair of all components. A number of intermediate repairs will be carried out between general overhauls, chiefly depending on tyre wear.

Inspections are classed as short-period (daily or every seven days) and long-period (at intervals of 14-35 days, or 6,000-8,000 miles). A short-period inspection requires 1-2 hr., long-period 6-10 hr., intermediate repairs 1-2 days for change of bogies, and general overhaul from 11-30 days; the longest time occurs when complete re-wiring is necessary as a result of breakdown of insulation on cables and other connections.

Much attention has been given to increasing the interval between general repairs by methods such as provision of flange or rail lubrication to reduce tyre wear, improved lubrication of axle bearings by felt oilers, and substitution of roller for plain bearings. Grades of insulation are also being improved, and the condition of components on dismantling is analysed to ascertain whether the number dismantled can be reduced. The limiting factors which influence inspection and shopping periods are chiefly pantograph strip wear, brake block wear and adjustment between inspections; and condition of tyres and commutators for longer-period repairs.

The repair liability is carefully planned by each administration, which can deduce, from total mileage expected to be run during each year and the known mileage which each class of locomotive can run between repairs, the number of repairs of various categories which will be required during a year in order to maintain the stock in serviceable condition. The short period inspections can be controlled on a purely time basis, and there appear to be fairly common systems of central shopping controls which regulate the allocation of locomotives to works for repairs.

The directions in which managements have moved in order to shorten the time locomotives are under repair are in the provision and maintenance of spare parts and interchangeable assemblies, analysis of repair methods, and of forms of wear experienced. As tyre wear is one of the major influences, attention is being directed towards the use of machines for reprofiling tyres which are in position under the locomotives.

Common User of Locomotives

All administrations reported the use of locomotives in a pool in common user, without allocations to particular drivers of small groups of drivers. On long runs, crews are changed en route in order to work the locomotive through and to reduce terminal and turnround time. The limit of crews' runs may be governed by the distance over which they have to learn the road. Many electrifications at present are short, so that change of crews during a run is unnecessary, but common and intensive use of locomotives is general.

Normally locomotives are taken to a depot between duties only if necessary for routine maintenance, or if a specific defect has developed. On some northern lines, however, climatic conditions make it desirable to stand locomotives in sheds if not actually required for service. Much care is being taken in training crews to enable them to handle locomotives intelligently and be able to report defects or symptoms in handing them over or shutting them down. The amount of examination which a crew is required to make varies, but in most organisations it is very small, being chiefly superficial inspection of brake gear, sand gear and lights.

Cost of Maintenance

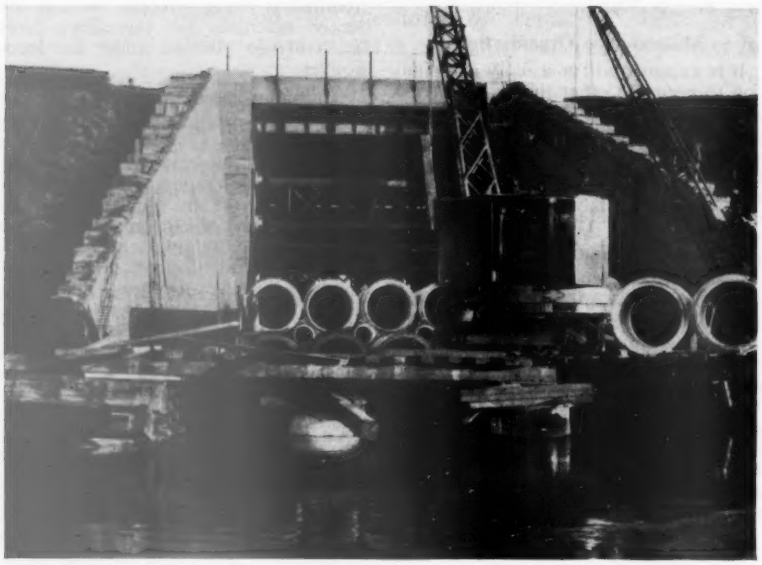
The reporter has estimated maintenance costs as a percentage of the capital value of locomotives, with the reservation that even this basis may be complicated by various considerations. Heavy overhauls appear to cost up to 3·8 per cent of value for labour and materials, but figures down to 2 per cent are quoted. Long-period inspections cost very much less and are of the order of 0·05 per cent. Man-hour figures quoted varied widely and may be affected by the size and rated horsepower of the locomotives. The administration quoting one of the highest man-hour figures for general overhaul gave a relatively short period out of traffic for the locomotives concerned. Figures returned for man-hours on general overhaul ranged from 2,000 to 6,000, and on long-period inspections from 24 to 115, varying between these limits through the maintenance cycle.

In general it is not considered that there is a relationship between maintenance costs and age of locomotives.

Administrations are seeking to counteract rising costs by improvements in design, manufacturing and repair methods, and by reduction of wear, particularly with the object of reducing the periodical maintenance required and extending the time between maintenance operations.

Elton Viaduct Replaced by a Cellular Embankment

Multi-layer 4/5-ft. pipes to combat continued subsidence



Strutting between the abutments being removed as layers of pipes are laid up to the under side

ELTON Viaduct (Bridge No. 12 between Crewe and Sandbach on the Crewe-Manchester main line of the London Midland Region) was built in 1842 of brick arches, seven under the slow lines, and four under the fast lines, in effect, two separate bridges. For many years it had been seriously affected by subsidence due to brine pumping; between 1892-1956 this amounted to about 16 ft., the yearly average fluctuating between 2 in. and 9 in. The present average is 8 in. and it is considered that the subsidence will go on indefinitely.

During the years 1937-1939, the arches were broken through and filled in, forming an embankment, with one bridge-opening carrying the railway over the River Wheelock. The bridge spanning this opening was 35 ft. 7 in. in length and consisted of the Sandbach abutment in concrete, faced with blue brick, the Crewe abutment composed of an existing arch pier thickened to form an abutment, and a superstructure comprising steel deck girders with beams-in-concrete deck slab.

Since 1939, the bridge superstructure has been lifted on a number of occasions, and the abutments and wing walls built up to suit. The last two lifts were in 1952 and 1956, and on each occasion it was found necessary to insert, permanently, steel struts between the abutments to keep them stable.

The lift in 1956 was the last possible under existing conditions, since the substructure was not stable enough for future building up. In consideration of the requirements of the modernisation plan, including main-line electrification, it was considered essential that a bridge-opening should be provided, which would permit of unlimited subsidence without need to heighten and strengthen the existing abutments by an unpredictable amount.

Design of Cellular Embankment

The new construction takes the form of layers of 5-ft. external dia. (4-ft. bore) reinforced concrete pipes, laid through the bridge opening, and gradually curtailed in total length as the layers get higher, to follow the approximate outline of the existing embankment. The completed works will thus be a honeycombed embankment, the bottom layer of pipes resting on a reinforced concrete raft, and the pipes themselves being concreted together, with suitable reinforcement, so that the whole structure acts as a single unit. As the structure subsides the level of the embankment top will be maintained by adding further layers of pipes. So far as is known the construction as described is unique as a conception for overcoming the problem of perpetual subsidence, such as is taking place at this site.

Boreholes sunk in the river bed showed that the ground consisted of a mixture of sand and silt to a depth of at least 15 ft. From the results of the soil investigation, it was assumed, in the initial stages of the construction that if the load transmitted to the ground did not exceed 1 ton per sq. ft. the settlement would not exceed a few inches. This would enable the construction to be completed before any appreciable settlement occurred.

Should the ground beneath the structure settle, its low ultimate bearing capacity, even after compaction due to the weight of the structure had taken place, would preclude the structure being supported by a small area. Thus the build-up of large contact pressures would not be possible, and in the design it was assumed that this value would not exceed 2·25 tons per sq. ft. The cellular structure is designed to resist any lateral

(*Continued on page* 538)



Two layers of pipes with reinforcement and small pipes in the spaces between adjacent pipes ready for concreting

Progress in Western Pakistan

Expansion of diesel traction and diesel staff training: modern coach-building methods



"World" class Co-Co diesel-electric locomotive for North Western Railway 5-ft. 6-in. gauge lines

THE North Western Railway of Pakistan continues to make considerable headway with diesel-electric traction, first introduced in 1951. Already 102 diesel-electric units, supplied by the American Locomotive Company, the General Motors Corporation, the International General Electric Company and S.A. Alsthom, have been successfully placed in service for working important main line passenger and through goods trains. Since the end of 1957, 18 more "World" class 1,800-h.p. locomotives, built by the American Locomotive Company, have been added to this fleet. The development of diesel-electric traction can be gauged from the fact that 669,000 miles a month—or 27·8 per cent of the total engine mileage on the railway—are now provided by diesel units.

The new "World" class Alco diesel-electric Co-Co locomotives incorporate a number of improvements over the earlier design following the experience gained in the mechanical and operational fields. An improved fuel-injection pump, a directly-extractable piston and connecting-rod assembly, and an excitation equipment with considerably reduced terminals, relays and other parts, to curtail risks of failure, are some of the significant features. These locomotives are somewhat narrower in overall dimensions and, despite their greater horse-power, have an axle-load of 17 tons against the 18·2 tons of the earlier locomotives. All the wheels on the trucks are powered, and vacuum exhausters of greater capacity have been provided so that requisite vacuum can be maintained under all conditions. These locomotives are designed for multiple operation with the older locomotives and can be utilised with greater flexibility.

Training of Diesel Staff

One of the most serious problems arising from the introduction of diesel-electric traction was to train enginemen and maintenance staff previously used to steam operation successfully to handle and maintain the new type of motive power. A training school for all types of personnel was set up in 1954 and was equipped with working models, drawings, diagrams and other devices.

Technical advisers were first appointed and training of selected railway personnel was arranged in the United States. This diesel school is at present housed in an old diesel shed building converted into a modern technical school with three lecture rooms, each accommodating 25 pupils, a spacious model room holding 80, a growing technical library and a projection room. N.W.R. staff selected for their aptitude and trained in the U.S.A. are in charge of all the school's functions and have, so far, trained over 600 persons. Well-defined and prescribed syllabuses have been laid down, including a basic course of two weeks for all staff, an operation course of six weeks for locomotive crews, and advance trade courses of six weeks for maintenance staff. In addition refresher courses are given to personnel periodically, so as to make them conversant with latest developments in this field. Cut-away models spot-light the need for avoiding mishandling and breakdowns, films are extensively used as teaching-aids, and the school equipment includes tape-recorders for playing-back important lectures and for translating commentaries on films into the regional language.

Large Scale Diesel Training

The N.W.R. has an expansion programme based on an annual addition of 20 diesel units till the ultimate strength of the fleet has reached 600.



Model room in the diesel training school, Karachi



Oil tank wagon built at Moghalpura Works

To maintain a proper flow of staff, over 150 operating and 200 maintenance personnel have to be trained each year. Moreover, plans are now under way for the construction of a new school.

With the growth of the diesel-electric fleet to its present size, close supervision and technical guidance is not possible in the existing centralised shed-cum-shop organisation at Karachi. Maintenance and terminal facilities are being expanded with a repair shop planned for Rawalpindi and intermediary repair facilities at Rohri, Kundian and Lahore. Considerable success has been achieved by the provision of driver-instructors and line-electricians for supervision and maintenance on the road.

Carriage and wagon construction on this railway has been developed as a matter of national policy to overtake arrears of replacement of overage stock and to meet additional needs created by growing industrialisation and changed traffic conditions brought about by independence.

Under a programme for the construction of 1,000 broad-gauge general-service wagons and 100 broad-gauge bogie carriages a year, manufacture began in 1955 to turn out stock of orthodox types. Subsidiary production lines have been established within the workshops area at Moghalpura, Lahore, using to a large extent the existing capacity, by reorganising the carriage, wagon and steam-locomotive shops. Experience has now been gained in the construction of both riveted and all-welded steel wagons, and up to the end of 1957 nearly 800 new wagons had been placed on line; the current rate of production is 800 a year rising to 1,000 in 1959.

Of the 162 carriages being built, 100 were placed in traffic in 1957, and during 1958, 62 of them and 55 cold-storage vans will be in service.

Integral Coach Building

The problem of coach-building was complicated by the decision to adopt modern methods of construction and standards of passenger comfort, notably the all-welded semi-tubular all-steel design. Advantage is therefore being taken of current orders for stock from Germany to train requisite staff in the specialised technique involved, by specifying that a proportion of these carriages be imported in a finished condition, and that the remainder should be unfinished and in a "knocked-down" condition.

With the reorganised carriage and wagon construction and assembly shop in full production in 1959, it is expected that production of light-weight steel coaches from raw materials will then be taking place at the rate of around 100 a year.

Considerable reorganisation of stores depots is also going ahead and staff is being made available by training abroad. The average cost of construction of a carriage and wagon is about 30-40 per cent cheaper than the cost of imported stock.

Elton Viaduct Replaced by a Cellular Embankment

(*Concluded from page* 536)

force from the embankment, and the spaces between the pipes and the abutments will be filled with concrete. No work will be carried out on the existing abutments.

The following is the sequence of construction: A sheet-piling wall was first driven across the river at both ends of the bridge opening, leaving a space near to one abutment through which a timber flume was constructed to take the flow of water. The remaining area between the sheet piling was pumped dry. Half the reinforced-concrete mat was then emplaced, and three 5-ft. dia. pipes were laid on it for their entire length and concreted in. Subsequently the river was diverted through the three pipes and the timber flume removed. The remaining portion of the reinforced-concrete mat was next emplaced, and three more 5-ft. dia. pipes laid on it to complete the bottom layer of pipes. This enabled the sheet-piling across the river to be removed, allowing the river to flow through the bottom layer of pipes.

As subsequent layers of concrete pipes are built up, the existing steel strutting between the abutments is being removed when the pipes reach their undersides. The space between the wing walls and the pipes is also to be filled in.

A footbridge and adjustable screen are being erected at the inflow end of the pipes, and finally the superstructure of the existing bridge will be removed, and replaced by ballasted track.

The work is being executed by the Civil Engineering Department of the London Midland Region, under the direction of the Chief Civil Engineer, Mr. J. Taylor Thompson.

N.E. Region Introduces Diesel Trains on Esk Valley Route.—North Eastern Region of British Railways has introduced a service of diesel trains between Middlesbrough and Scarborough via the Esk Valley route as from last Monday. From this date a service of diesel trains was also brought into operation between Middlesbrough and Loftus via Guisborough. These diesel services replace existing steam-hauled services. The diesel trains are composed of two-car railcar sets, both cars being powered by two 150-h.p. underfloor diesel engines. Each set has accommodation for 12 first- and 105 second-class passengers. They can be coupled together up to a maximum of eight cars. A luggage compartment and toilet facilities are also provided in each set.

Caledonian Railway Excursion from Perth to Dundee.—Former Caledonian Railway locomotive No. 123 in the blue livery of the company, at the head of two ex Caledonian coaches will visit Perth on Saturday (tomorrow) on an excursion from Glasgow, Larbert and Stirling. The train will leave Glasgow Buchanan Street at 1.30 p.m., and will travel via Larbert and Stirling to Perth. Railway enthusiasts from Perth will have an opportunity to travel on this train when a special excursion run will be made to Dundee during the later afternoon. The train will then return to Perth and Glasgow. No. 123 was a familiar spectacle before her retiral when she hauled trains between Perth and Dundee. When she was withdrawn from service in 1935 she had run 780,000 miles.

ELECTRIC RAILWAY TRACTION SECTION

Future of the D.C. Locomotive

AMONG the considerable group of railways using d.c. traction, the question must be asked sometimes whether the d.c. locomotive is likely to undergo further fundamental development. Postwar designs have shown many improvements in detail besides the general trend towards weight reduction, elimination of carrying axles, and high horsepower and tractive effort ratings in four-axle types.

The booster principle of the Southern Region Co-Co was a fundamental break with conventional resistance control methods, but was called into being by the special circumstances of third-rail electrification on main lines. Its continuance in new locomotives for the East Kent scheme will give a wider sphere of activity for a system with much to commend it when its installation is justified by external conditions, but such conditions are unlikely to be found elsewhere. In British-built locomotives for overseas, postwar practice has exhibited features such as forced-ventilated resistors, regenerative braking over a wider speed range, and increases in the number of weak-field notches, with higher degrees of shunt, but the basic design of motors and control systems has seen little change apart from an example of rotary amplifiers being used in connection with regeneration in motor coach stock.

It is likely that more will be heard of regenerative braking on d.c. lines in future, and that apart from the fundamental problems of disposing of regenerated power, design will tend towards a simplification of controls so that electric braking can be initiated without special balancing procedures. It is indicative of the interest now being taken in electric braking that the Bo + Bo locomotives on the Manchester-Sheffield-Wath lines have been the subject of modifications recently to incorporate rheostatic as well as regenerative braking, with changeover to the former when speed falls to the appropriate level.

A suggestion of more fundamental changes to come in d.c. locomotive practice has been made by Monsieur F. Nouvion, Chief Engineer, Electric Traction Development Division, French National Railways, in the course of an article in the January issue of the *Revue Générale des Chemins de fer* on the new "9200" class of 1,500-V. d.c. locomotives. Referring to the fact that these locomotives retain a traditional form of series/parallel control, he makes the comment that an electrical system of new conception will be embodied in some 60-ton lightweight Bo-Bo locomotives now under construction for S.N.C.F. 1,500-V. lines. One locomotive in the "9200" class itself, however, has been made the basis of an experiment aimed at increasing the range of economical running speeds, which, with a four-motor arrangement, using two groupings, falls short of what can be provided with a three-grouping scheme in the zone of lower speeds and tractive efforts. The locomotives start in series-parallel and then go normally into full parallel. It has been decided not to use a grouping of four motors in series for starting, because of the superior adhesion with the machines connected in two parallel groups of two in series; but to equip one locomotive in the class experimentally so that it will be possible to put all motors in series when a speed of over 15·5 m.p.h. has been attained. The equipment will provide for the rapid insertion and subsequent elimination of the resistances to obtain speedy transition into full series.

This use of three groupings in a four-motor locomotive is unusual today, although familiar enough in the text-books on electric traction. We cannot recall, however, a discussion in the text-books on the merits of backward transition from series-parallel to series after starting, and the outcome of this unorthodox experiment will be watched with interest by all who believe that the d.c. locomotive with basically conventional control equipment is well able to hold its own with other systems of electric traction.

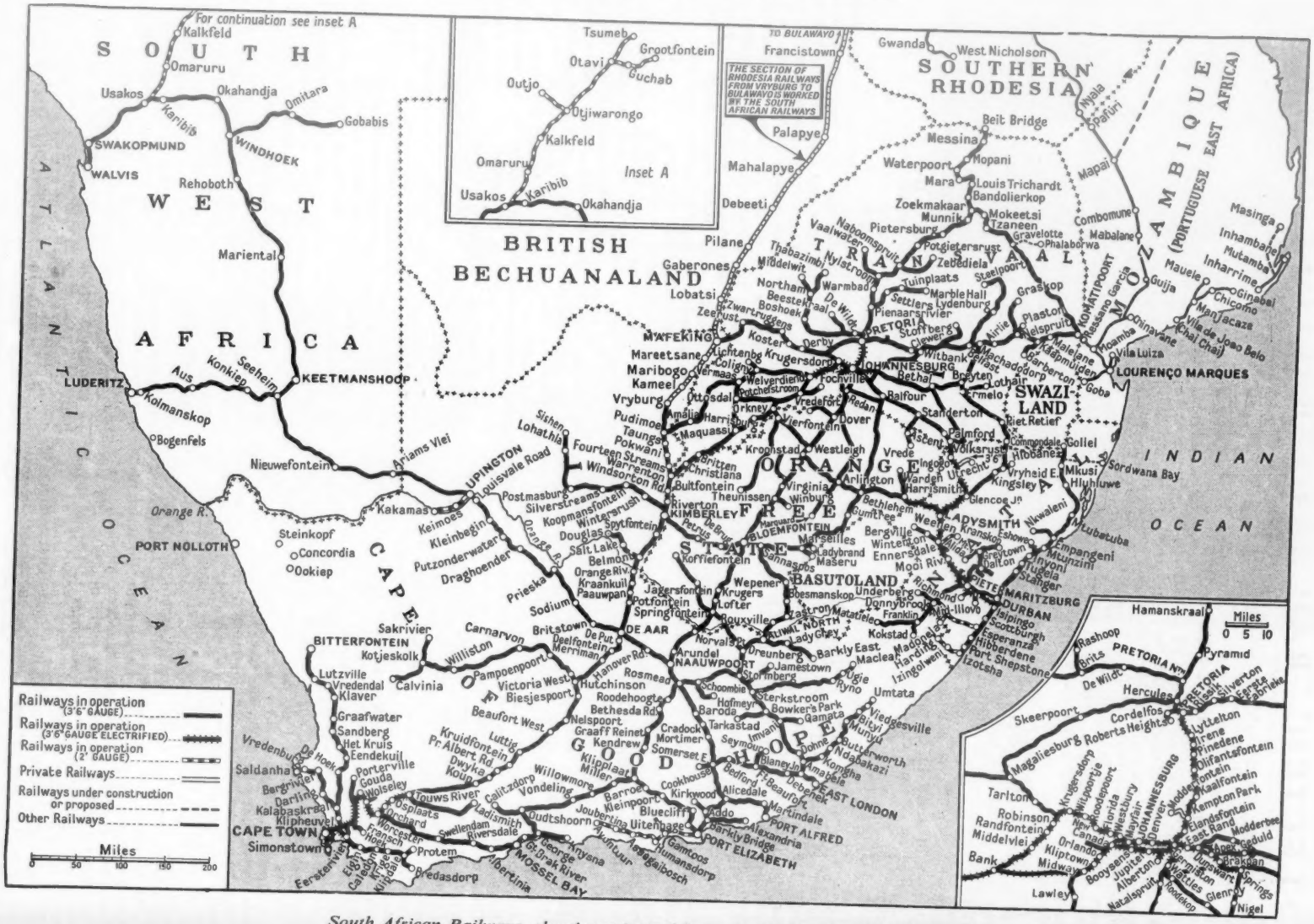
Any development of more finely-graded control of d.c. motors will contribute to starting performances as impressive as those of a.c. rectifier traction. Commutation remains an unpredictable quantity in the behaviour of d.c. machines to a greater extent than is sometimes realised, but the d.c. locomotive may benefit from further research into this subject now that a new problem has presented itself in the shape of operating d.c. motors on current containing a ripple after single-phase rectification.

A New Traction Rectifier

WHEN the development of rectifier was resumed after the war, the ignitron was the smallest unit available of the required capacity, and since then it has been used more widely than other types of rectifier in locomotives and motor coaches. The mode of operation of the ignitron, in which the arc is not maintained in non-conducting periods but is re-struck in each positive half-cycle, was considered to minimise the risk of backfires and so allow a small anode-to-cathode separation, thus not only reducing the size of the rectifier for a given duty, but also bringing the advantage of a low arc-drop. In practice, however, the need for baffles to limit backfires has prevented the attainment of arc-drops as low as had been hoped, and so other means have been investigated of combining high efficiency with small size in a mercury-arc rectifier which will stand up to the vibration and liability to mechanical shocks inherent in railway service. A result of research in this direction is the Com-Pak single-anode mercury-arc rectifier developed by the General Electric Co. Ltd., which will be installed in the locomotives and motor coach equipments being supplied by that company for high-voltage, single-phase electrification at 50 cycles on British Railways. A description of the rectifier and of some of the tests to which it has been subjected so far appears on another page.

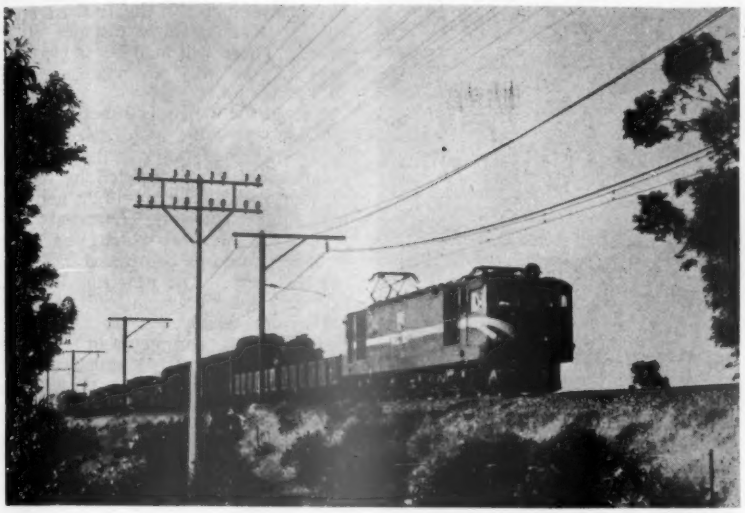
The Com-Park rectifier is as small as existing traction ignitrons, and has an arc-drop which is understood to be approximately half the best figure quoted generally for the ignitron type. The new rectifier is an excitron in which an improved technique of anchoring the cathode spot has enabled a small anode-to-cathode separation to be used without requiring baffles corresponding to those of the conventional ignitron for traction. In this way, assisted by appropriate design of the liquid cooling arrangements, small size and a low arc-drop have been attained without increased liability to backfires. At the same time it is felt that the simplicity of the excitation system in an excitron, compared with the electrical circuits for the same purpose in an ignitron, is a practical advantage in meeting the conditions of railway service and maintenance. When the important part played by cooling in anchoring the cathode spot and the various means of maintaining the rectifier operating temperature within limits conveniently applicable to a liquid-cooling system are considered, it appears that, overall, liquid cooling compares favourably with forced air ventilation. An assembly of Com-Pak rectifiers could provide a greater output than a germanium group occupying the same space. Further tests of a rectifier with such potentialities will be followed with interest, and the recent exhibition of Com-Pak units at the German Industries Fair in Hanover must have served a valuable purpose in demonstrating to an international gathering that development of equipment in this country for 50-cycle traction is striking out on lines of its own.

Electrification in South Africa


For continuation see inset A
Kalkfeld
Omaruru
Usakos
Okahandja
Karibib
Omitara
Gobabis
SWAKOPMUND
WALVIS
WINDHOEK
Rehoboth
Marienta
LUDERITZ
Aus
Konkiep
Seeheim
KEETMANSHOOP
Kolmanskop
Bogenfels
Nieuwefontein
Arians Vlei
Orange R.
Steinkopf
Concordia
Ookiep
PORT NOLLOTH
Kakamas
Keimoes
Kleinbegin
Putzonderwater
Draghoender
UPINGTON
Louisvale Road
Postmasburg
Silverstreams
Koopmansfontein
Wintersrush
Douglas
Salt Lake
Belmont
Orange Riv.
Kraankuil
Paauwpan
Prieska
Sodium
Sishen
Lohatla
Fourteen Streams
Warrenton
Windsorton Rd
Spytfontein
Britten
Christiana
Bultfontein
Theunissen
Riverton
KIMBERLEY
Petrus
De Bruyn
Jagersfontein
Potfontein
Springfontein
Koffiefontein
Wepener
Krugers
Lofter
Zastron
Rouxville
Aliwal North
Lady Grey
Matatiele
Sakrivier
BITTERFONTEIN
Kotjeskolk
Carnarvon
Williston
Britstown
De Put
Deelfontein
Merriman
DE AAR
Norvals Pt.
Arundel
NAAUWPOORT
Dreunberg
Barkly East
Jamestown
Stormberg
Ugie
Lutzville
Vredendal
Klaver
Calvinia
Pampoenpoort
Victoria West
Hutchinson
Rosmead
Hanover Rd
Bethesda Rd
Roodehoogte
Nelspoort
Graaff Reinet
Kendrew
Cradock
Mortimer
Somerset E.
Tarkastad
Imvani
Seymour
Dohne
Komga
Butterworth
Ngobakazi
Umtata
Viedgesville
Bilyi
Munyu
Qamata
Bowkers Park
Hofmeyr
Baroda
Schoombie
Sterkstroom
Tyno
Graafwater
Sandberg
Het Kruis
Eendekuil
Beaufort West
Luttig
Kruidfontein
Pr. Albert Rd
Dwyka
Koup
Willowmore
Miller
Klipplaat
Barroe
Kleinpoort
Joubertina
Uitenhage
Kirkwood
Blueclift
Addo
Alexandria
Barkly Bridge
PORT ELIZABETH
Gamtoos
Humansdorp
Jeffreys Bay
Assegaibosch
Vanstadens
Vanrhynsdorp
Vredenburg
De Hoek
Saldanha
Bergrivier
Darling
Kalabaskraal
Klipheuvel
CAPE TOWN
Simonstown
Porterville
Gouda
Wolseley
Touws River
Ospisaats
Worcester
Robertson
Franschhoek
Stellenbosch
Somerset West
Caledon
Swellendam
Riversdale
Ladismith
Dudtshoorn
Calitzdorp
Vondeling
Willowmore
Anysna
Knysna
Plettenberg Bay
George
Mossel Bay
Albertinia
Protem
Bredasdorp
Hermanus
Caledon
Napier
Bredasdorp
Riversdale
Heidelberg
Riversdale
Swellendam
Ladismith
Calitzdorp
Oudtshoorn

Electrification in South Africa

Progress on £37 million programme in all four provinces of the Union



Freight train passing through Wolseley Cape headed by a North British "4E" electric locomotive

THE most recent calculation of the approved electrification programme adopted by the South African Railways Administration is that the total expenditure will amount to approximately £37,000,000. While electrification thus becomes an extremely important aspect of traction, it does not mean the end of the steam locomotive, which will continue to be extensively used, while the diesel programme is also comprehensive. After the Japanese National Railways, which also are on the 3-ft. 6-in. gauge, the S.A.R. has the most extensive electrified mileage in the world of lines of less than standard gauge.

Orange Free State

A feature of the present programme is that electrification has now also come to the Orange Free State. Work is well under way on the 121-mile Vereeniging-Kroonstad section, the first line to be electrified in this province. The doubling of the line was completed in 1956 and electrification work has been in progress since May, 1956. Foundations for the overhead masts have been completed between Kroonstad and Coalbrook and work on the Coalbrook-Vereeniging section is now in progress. Wiring has been started between Coalbrook and Koppies.

The project, which is expected to be completed by June, 1959, will eventually cost about £3,110,000, of which £377,500 has already been spent.

Natal

The programme in Natal has reached an advanced stage and the end of this year should see the completion of the work. Tunnelling between Boughton and Merrivale is at present retarding the doubling and electrification of the Natal main line, but once this last drawback has been overcome, the rest of the work will present no problem. The electrification part of this project will cost about £1,600,000.

In April, 1956, work was started on electrifying the single line between Rossburgh and Cato Ridge, 40 miles, and this is scheduled to be completed in October of next year. All work on foundation laying, the construction of steelwork and masts and the wiring has been done while the sub-stations are at present being constructed.

Once this line has been electrified it is expected that the bulk of the present main line goods traffic will be diverted over it. It is intended that passenger traffic will be concentrated on the present main line.

Part of this line, the section Rossburgh-Hillcrest, was due for electrification in 1938, but the project was interrupted by the war shortly after work had started. However, some of the material installed in those days can still be used on the present project, which will cost about £600,000, and of which £300,000 has already been spent.

With the completion of the electrification programme in Natal this province will have 400 route miles of electrified line.

Cape Province

In the Cape Province a distance of 210 route miles is being electrified at a total cost of £4,162,175. The most important section still to be done is the main line between Touwsrivier and Beaufort West, 179 miles. This is the longest single stretch of electrification ever to be undertaken by the South African Railways and the work will take nearly four years. Depots have been established at Beaufort West and Laingsburg and from now on the work will go ahead at full speed. The civil engineering and other works already have been completed.

Electrification of this stretch of main line will bring about a great improvement in the movement of traffic between Johannesburg and Cape Town. The present carrying capacity will be nearly doubled, from about 19,000 tons to more than 32,000 tons per day. In addition, operation costs will be greatly reduced.

Train loads on this route can be stepped up from 944 tons to 1,560 tons, and apart from the fact that coaling and watering are unnecessary on electrified sections, electric units do not entail the handling problems associated with steam locomotives.

When this section is electrically operated, the condensing-tender locomotives now stationed at Touwsrivier will be moved to Beaufort West, De Aar, and Beaconsfield, for use between these points.

The project will cost about £3,020,000 and it will bring the total cost of electrification between Cape Town and Beaufort West, a distance of 339 miles, to more than £5½ million. The section betwen Bellville and Touwsrivier was opened in May, 1954.

Various other lines in the Cape are being electrified. The Matroosberg-Kleinstraat section, a distance of 6½ miles long, on the Cape Western main line between Bellville and Touwsrivier, has just been completed at a cost of £73,500. There is a double line between these two points and when the Bellville-Touwsrivier section was electrified only a single line was done. Work on this project was started in August, 1956.

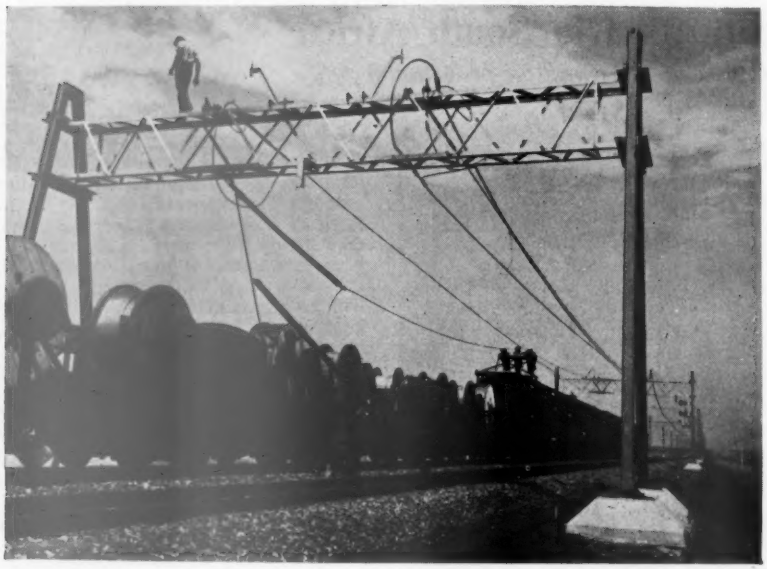
Suburban Lines

Good progress is being maintained on the electrification of the new non-European suburban lines Langa-Athlone, Athlone-Dieprivier, and Cape Town-Nyanga, a total route mileage of 22. Work on these various projects has been in progress now for nearly two years.

The section Athlone-Dieprivier has been completed, while the section between Cape Town and Nyanga will be completed early next year and Langa-Athlone in December, 1960. Expenditure on these lines to date amounts to £101,000 and the total cost of the programme will amount to nearly £1,068,700.

When the programme for the Cape, including the section between Bellville

South African Railways, showing principal lines electrified at the end of 1957



Wiring train on the Vereeniging-Kroonstad main line, Orange Free State, paying out conductor cable

and Kensington, a distance of 8½ miles, on which electrification is due to start soon, has been completed, the total route mileage of electrified lines in this province will be 435.

Transvaal

A total of 302 route miles is being electrified in the Transvaal at a cost of £6,703,221, of which more than a £1,000,000 has already been spent. One of these projects, Springs-Welgedag, has been completed, while several others are nearing completion.

The Apex-Rangeview-Dunswart section in the Germiston area will be placed in service this month, while the completion date for the 58-mile stretch between Welverdiend and Klerksdorp is October this year.

Wiring has been completed all the way except for the yard at Klerksdorp and work is now going ahead on the sub-stations.

All the electrification projects in the Pretoria area should be completed during this year including the Eerste Fabrieke-Koedoespoort section which was started only recently. The section Pretoria-Koedoespoort was completed during March, while the new non-European line Atteridgeville-Cordelfos will be completed this month.

Electrification in the Pretoria area will cost about £621,700 and the expenditure so far amounts to more than £117,000.

Johannesburg Area

In the Johannesburg area good progress is being maintained on the building and electrification of the various new non-European lines. The New Canada-Dube line has reached the half-way stage and is scheduled for March, 1959. The Dube-Doornkop section is to be completed in December this year, while the Crown-West Street double line which is only 1¼ miles long should be in service by the end of this year.

Around Vereeniging, electrification has also reached the half-way stage and the 29 mile stretch between Midway and Vereeniging, which will cost about £869,200, will be placed in service towards the end of this year or early next year. The section Wattles-Vereeniging (34½ miles) which is being undertaken in conjunction with the programme of electrification for the Orange Free State, is due for completion in February next year and when the section between Vereeniging and Kroonstad is finished there will be an electrified double line all the way from Broodsnyersplaas in the Eastern Transvaal to Kroonstad, a distance of 222 miles. There will also be an electrified line all the way from Johannesburg to Kroonstad.

Except for the India Junction-Elsburg section, where the quadrupled lines are being electrified, work in the Germiston area should be completed by the end of this year. The doubling and electrification between Dunswart and Alliance (£346,599) which was started in 1956 should be completed in September this year. The new non-European double line between Alliance and Daveyton, which was started in 1957, should also be completed in September, while the Angus-Katalang-Elsburg-Germiston East new double line £428,853) is scheduled for December this year.

Eastern Transvaal

In the Eastern Transvaal the coal lines between Witbank and Welgedag and Broodsnyersplaas-Oogies are being electrified at a total cost of £2,388,150. Work has been in progress on the Witbank-Welgedag section since May, 1956, and the expenditure to date amounts to more than £83,000. The completion of this project has been scheduled for October, 1960. Work on the Broodsnyersplaas-Oogies section is also due to be finished in October, 1960.



Conductor cable being temporarily fastened to the catenary on the main line between Vereeniging and Kroonstad

Single-Anode Rectifiers for Traction Units

For installation in vehicles subject to vibration

ELECTRIFICATION of certain British Railways main and suburban lines on the 25-kV., 50-cycle, single-phase system has brought the need for rectifiers of much smaller size for a given output than conventional mercury-arc types, and suitable for installation in vehicles subject to vibration, impact shocks, and other random movements. Tests have been carried out on British Railways on a single-anode mercury-arc rectifier designed to meet these conditions. A new unit, the Com-Pak mercury-arc rectifier, developed by the General Electric Co. Ltd., is to be installed in the locomotives and multiple-unit stock which the company is supplying for a.c. electrification on British Railways.

The Com-Pak rectifier is a single-anode cylinder with liquid cooling. It is being made in two sizes, the C7-Mk1, rated to give a continuous output of 120 A. at up to 1,250 V., and the C9-Mk1 unit of double this capacity. Overload capacity is 125 per cent of rated current for 2 hr. in accordance with B.S.1698 class II.

Cathode spot stability combined with efficient cooling has made it possible to achieve the high outputs required within the limited dimensions of these rectifiers. Furthermore, in the Com-Pak rectifier the arc path is shorter, the voltage drop lower, and consequently the efficiency higher than in conventional types of mercury arc rectifier. The anchoring of the cathode spot has also facilitated the incorporation of additional devices to restrict swilling of the mercury caused by vibration and shock, while enabling certain other forms of baffle to be dispensed with so that a smaller anode/cathode separation than usual becomes practicable. The lower arc drop also reduces cooling requirements.

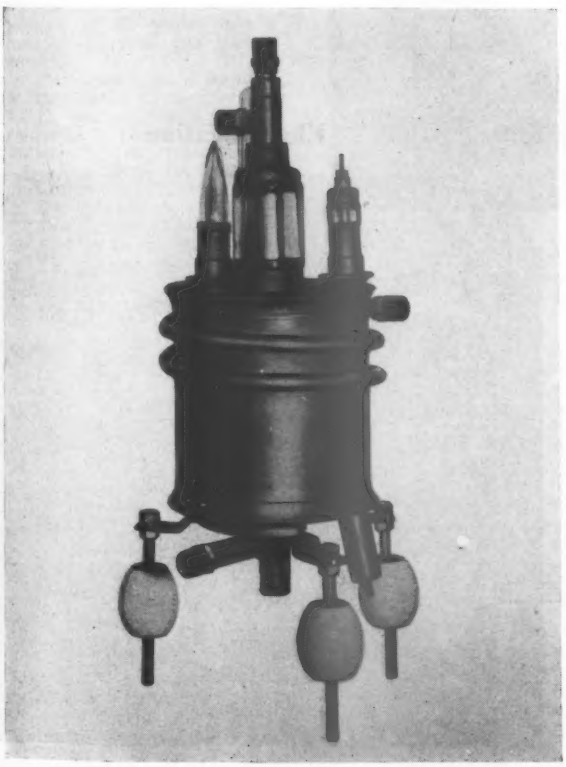
The ignitor is of the squirt type. A plunger is pulled down by energising a solenoid external to the rectifier, which forces a jet of mercury from a small nozzle against the excitation anode and completes a circuit to establish a direct current arc between the excitation anode and the cathode. This continuous excitation current is used to actuate a contactor which breaks the ignition solenoid circuit and allows the plunger to rise again to the top of the ignition tube. If the excitation current should fail, the contactor re-closes and re-energises the ignition solenoid.

Excitation current varies between 3 and 6 A. depending on the supply voltage. The excitation circuit for each rectifier cylinder is fed from a separate source and is self-contained.

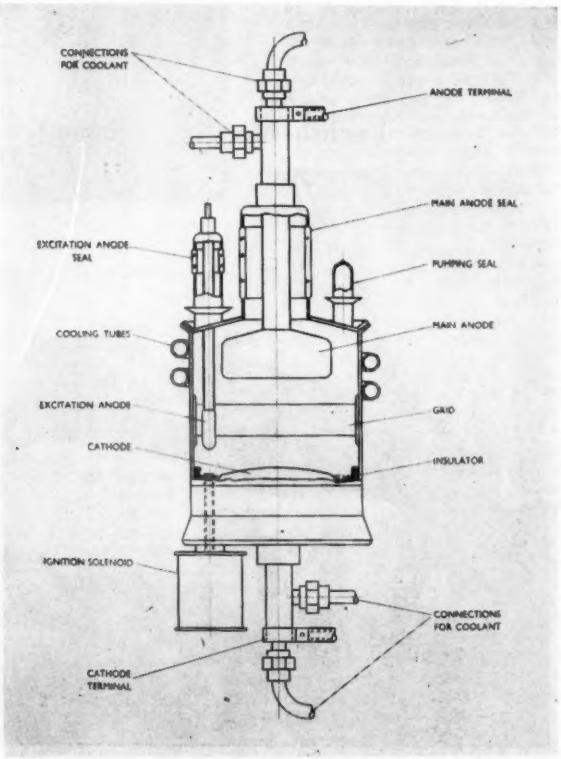
In electric motor coaches and locomotives the rectifiers will be connected to give full-wave rectification. Eight cylinders, supplying the four 200-h.p. motors of a motor coach, with the cooling apparatus and water pump, will occupy a cubicle measuring some 6 ft. 4 in. long, 2 ft. 9 in. high and 2 ft. 6 in. deep. Ignition circuit equipment will be installed separately in another case. An installation for a 3,300-h.p. locomotive might be divided between two cases, each about 6 ft. long, 4 ft. 6 in. high and 2 ft. 6 in. deep, containing all the apparatus except the coolant pump, which would be mounted separately.

Shock Tests

To test the rectifiers two bogie parcel vans were used one housed a 130-kW. diesel-alternator set which provided the source of power, and the other contained the rectifier equipment, transformer, and loading resistance. The rectifier equipment included four units (one acting as a spare) assembled in a framework comparable in size with that used for under-carriage mounting on multiple-unit rolling stock. The transformer permitted two conditions of d.c. loading, 130 A. at 1,000 V. or 260 A. at 500 V., giving a current loading on each



The General Electric Co. Ltd. Com-Pak rectifier



Internal arrangement of Com-Pak rectifier cylinder



Com-Pak rectifier equipment installed in a British Railways bogie van for tests under service conditions

rectifier of 43 and 86 A. respectively.

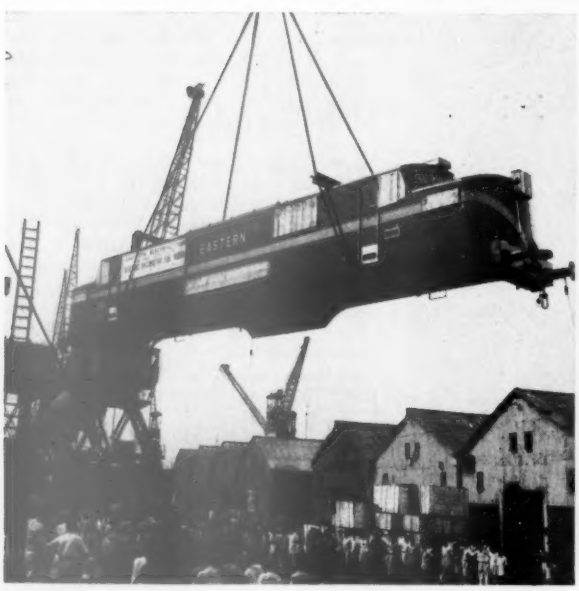
Tests included repeated shunting at walking pace against fixed buffers, giving rise to particularly violent shocks on the rectifiers. This was followed by runs at speeds up to 45 m.p.h. which included emergency stops and accelerations. The vans formed part of a close-coupled passenger coach train, and trial runs were made with the test vans at the front of the train and repeated with these vans at the rear. Similar tests were made with the vans attached to loose-coupled freight trains. The shocks experienced in this case were more severe than those likely to occur in normal service. Finally, the test vans were coupled close to the locomotive of a high-speed passenger train.

Throughout these tests, the performance of the equipment was satisfactory, only minor modifications to the mounting of the rectifiers being needed to give improved flexibility.

Hallade Recorder

During the test a Hallade recorder was used to provide a continuous recording of vertical, horizontal, and canting movements as well as speed, acceleration and deceleration. From this information a rocking platform was constructed for use at the works. With this equipment service conditions are closely simulated and rectifiers have now been tested under continuous full-load and cyclic loading conditions.

English Electric Locomotives for Indian 3,000-V. Electrification



Unloading one of 12 3,120-h.p. electric locomotives for the Eastern Railway of India



Locomotive being lowered on to bogies at Calcutta (see our issue of December 20, 1957)

RAILWAY NEWS SECTION

PERSONAL

We regret to record the death on May 4, in his 70th year, of Mr. W. P. Allen, Manpower Adviser to the British Transport Commission. Mr. Allen's photograph and biography were published last week, when we recorded his pending retirement on June 30. The funeral service is being held today, May 9, at Golders Green Crematorium at 11.30 a.m.

Sir Brian Robertson, Chairman of the British Transport Commission, writes:—"I am exceedingly sorry to hear of Bill Allen's death. His friends in this organisation came from every part of it and from every grade in it. It can well be said of him that he was a great trade unionist and a first-class management executive."

Sir John Benstead, Deputy Chairman, B.T.C., writes:—

"The passing of Bill Allen will be mourned by all who knew him, especially the railwaymen to whose well-being he devoted the whole of his working life.

"I was privileged to know him perhaps as intimately as almost anyone outside his family. In the 1930's, when we were members of our respective Trade Union Executives, and later as Officers, we cemented a friendship which during the critical years of the war helped to unify the railwaymen of all grades into a common purpose and understanding.

"His sagacity as a member of the General Council of the T.U.C. was invaluable in the immediate post-war years, particularly in relation to Social Insurance. He faced the sternest test of his career on his appointment as a member of the Railway Executive in 1947, when he carried responsibility for manpower, which he later bore as Manpower Adviser of the Commission up to his death. He faced with unswerving loyalty and courage the difficulties of the past 10 years, and his unfailing cheerfulness, courtesy and honesty commanded the respect of everyone at all levels. I can only say 'he was a man and a brother,' and we hope that the grief of those dear to him will be assuaged by the knowledge of the affection and esteem he so justly earned."

Sir John Elliot, Chairman of the London Transport Executive, writes:—

"The sudden death of Bill Allen, so unexpected and so sad on the eve of his retirement, has shocked his countless friends in all parts of the transport and railway world.

"Of his wonderful career from cleaner at the bottom to manager at the very top, and latterly as manpower adviser to the British Transport Commission, I need not write. It is known to us all.

"It is as an old friend of his from A.S.L.E.&F. days, and as his Chairman on the Railway Executive for its last three years, that I would pay my tribute to Bill. Staunch colleague, wise counsellor, tireless worker, fairest of debaters, keenest of controversialists, and above everything else, dearest of friends! His love for his fellow railwaymen in all grades of the service was his strongest trait, and even when engaged in opposing a union case, as was his duty from time to time, he never used an unfair word or sentence, or failed to pay full attention to the other side. His unique experience and vast knowledge of the intricacies of railway staff practice and procedure were always at the service of everybody, and he was the best-tempered man in a difficult situation I ever met.

"He had a strong sense of humour and a great love of sport; but best of all he loved to be with his wife and family, to whom we respectfully tender our deepest sympathy. We will remember a fine and lovable man, whose name will live in the history of our railways because of his devotion to them, and for the great contribution he made to all who are as proud as he was of the name of 'railwayman'."



Photo] [*Lafayette*

Mr. F. A. Pope

Who has retired from part-time membership of the B.T.C.

Mr. Frank Aubrey Pope, C.I.E., M.Inst.T., a part-time Member of the British Transport Commission, retired on April 30. Mr. Pope, who was educated at the Leys School, Cambridge, began his railway career with the L.N.W.R. in 1910. During the 1914-18 war he attained the rank of Major. He served in France and with the Salonica Force, was mentioned in despatches, and awarded the Greek Order of Merit and White Eagle of Serbia. He was a member of the Inter-Allied Food & Transport Commission in re-occupied areas, and from 1919 to 1921 was on the staff of the Ministry of Transport. He returned to the L.N.W.R. in 1921, and from then until 1925 served in the General Manager's office, first of the L.N.W.R., and then of the L.M.S.R. In 1925 he was appointed Divisional Superintendent of the Nigerian Railway and acted as Superintendent of the Line for periods in 1927 and 1929. He returned to the L.M.S.R. in 1930 as Assistant to the Chief Officer for Labour & Establishment, and later became General Executive Assistant on Sir Josiah Stamp's Staff at Euston. In 1932 and 1933 he twice visited India when his services were lent to the Government of that country as Chairman of a committee appointed to recommend measures to achieve greater railway efficiency and economy. In 1934 he was appointed General Assistant, Chief Operating Manager's Department, L.M.S.R., and, in July, 1938, became Superintendent of Operation. In 1940 he was appointed Director of Railways, B.E.F., with the rank of Colonel. He was again mentioned in despatches. In 1941, he became Manager of the Northern Counties Committee, Belfast, and, in 1943, Chief Commercial Manager. He went to India again in 1944 as Regional Port Director, Calcutta, and was made a C.I.E. in June, 1945. In 1946, Mr. Pope was appointed a Vice-President of the L.M.S.R. Towards the end of 1947 he relinquished this position on becoming a member of the Northern Ireland Road Transport Board, of which undertaking he was designated Chairman from January 1, 1948. He became Chairman of the Ulster Transport Authority later in the same year. He was Chairman of the Northern Ireland Section of the Institute of Transport for 1948-49. He was appointed a full-time Member of the British Transport Commission in 1951. The following year he was elected to the Ports Efficiency Committee. Mr. Pope relinquished full-time membership of the British Transport Commission in 1955. He became a Member of the British Railways Productivity Council in July, 1955 and, in September of the same year, was elected an additional director of the John Bull Rubber Co. Ltd. In January, 1956, he resigned his membership of the Port Efficiency Committee and, in April the same year, was appointed Chairman of the John Bull Rubber Co. Ltd. He was appointed non-resident Director & President of British & Irish Railways Incorporated in October, 1956. He held directorships of Trent Motor Traction Limited, East Midland Motor Services Limited, and the North Western Road Car Co. Ltd. from 1945 until his retirement last month from the British Transport Commission. [Editorial reference in this week's issue, p. 525.]



Mr. H. C. James

General Passenger Agent, Vancouver, Canadian Pacific Railway, 1950-58



Mr. D. W. Gilmore

Appointed Assistant Secretary, Canadian National Railways



Mr. R. T. Vaughan

Appointed Assistant to the President, Canadian National Railways

Mr. H. C. James, whose retirement as General Passenger Agent, Canadian Pacific Railway, Vancouver, was recorded in our March 7 issue, joined the company in 1914 as a junior clerk. He was born in 1897, and was educated at Moncton and Saint John grade schools and at Saint John High School. During the 1914-18 war he served with the 25th Battalion in France, was wounded, and was discharged in 1919. He returned to the C.P.R. in January 1919, as a passenger ticket clerk. Later he served on the Port Staff. In 1922 he became Travelling Passenger Agent at Kansas City. In 1926, he was appointed City Passenger Agent at St. Louis, and in 1927, he became Chief Clerk at St. Louis. In 1932 he was appointed District Passenger Representative, Dallas, Texas, and in 1935 General Agent at Atlanta. In 1936 he served as District Passenger Agent, Saint John and three years later he became Assistant General Passenger Agent, Montreal, and in 1939 held the same position at Toronto. Mr. James became General Passenger Agent at Montreal in 1943, and moved to Vancouver as General Passenger Agent in April 1950.

Mr. Douglas W. Gilmore, who, as recorded in our April 18 issue, has been appointed Assistant Secretary, Canadian National Railways, was born in Winnipeg, and is a Graduate in Arts of McGill University. After wartime service in the Royal Canadian Navy, he took up law at Osgoode Hall, Toronto, and graduated in 1947. He practised with the law firm of Kingsmill, Mills, Price & Fleming, before joining the C.N.R. as solicitor at Toronto, in 1948. In 1955 he was made Assistant to the Regional Auditor at Toronto and, in 1957, he became Administrative Assistant (Personnel) in the Revenue Section of the Accounting Department, Montreal. Later in 1957 he was appointed Assistant to the Comptroller, the position he now vacates.

Mr. Ralph T. Vaughan who, as recorded in our April 11 issue, has been appointed Assistant to the President, Canadian National Railways, was a former newspaper man at Halifax, N.S., and Executive Assistant to the Premier of Nova Scotia. He joined the Canadian National Railways in January, 1955, and since that time has been Special Assistant in the office of the President. Mr. Vaughan, a native of Halifax, is a graduate of St. Mary's University and Dalhousie Law School. During his collegiate and arts course he was awarded 15 medals for course leadership, including the Carswell Prize. While attending university, Mr. Vaughan was a reporter on the night staff of the *Halifax Herald* for two years and City Editor for



Mr. R. W. Kemp

Assistant Regional Accountant, Southern Region, 1945-58



Mr. C. H. Jones

Appointed Assistant Regional Accountant, Southern Region



Mr. E. R. Arlow

Appointed Shipping Traffic Superintendent, Belfast, L.M. Region

three years. He later entered the Canadian Army as a private and served as an instructor at Officers' Training Schools. He subsequently became Public Relations Officer at various commands, attaining the rank of Captain. In 1946, Mr. Vaughan returned to the *Halifax Herald* and was news editor for three years until called to the Bar of Nova Scotia. He then became a partner in the law firm of Fielding, O'Hearn & Vaughan and in 1951 was appointed Executive Assistant to the Premier of Nova Scotia.

Mr. R. W. Kemp, Assistant Regional Accountant, Southern Region, British Railways, whose retirement after 46 years of railway service was recorded in our February 28 issue, began his career in 1912 with the Isle of Wight Central Railway. He was transferred to the L.S.W.R. Headquarters in 1923. On the formation of the Southern Railway he became associated with financial and accounting matters arising from the amalgamation. He was later concerned in the London Transport Passenger Pooling Scheme, and served on committees dealing with the financial arrangements of Government control of railways during the 1939-45 war. He was appointed a Special Assistant to the Accountant in 1943, and became Assistant Regional Accountant in 1945. Mr. Kemp is a Member of the Institute of Transport.

Mr. C. H. Jones, who, as recorded in our February 28 issue, has been appointed Assistant Regional Accountant, Southern Region, British Railways, began his career with the Great Western Railway in the Chief Accountant's office in 1918. After experience in the Ledger, Staff and Joint Lines Sections, he became head of the Joint Lines Section in 1942, and head of the General Section in 1948. During the war, in addition to other duties, he was engaged under Government Control on the investigation of the L.N.E.R. accounts. In 1950 he transferred to London Midland Region as Assistant Book-keeper, and was appointed Assistant to the Accountant (Book-keeper) in 1951. He became Principal Assistant to the Accountant in 1953. He has been Chairman of the Railway Accountants' General Expenditure Sub-Committee since 1955. His father was on the staff of the G.W.R., and he has two sons on the Western Region.

Mr. E. R. Arlow, who, as recorded in our April 25 issue, has been appointed Shipping Traffic Superintendent, Belfast, London Midland Region, British Railways, began work as a personal clerk to the Steamship Superintendent. He has since spent the whole of his career with the shipping services at Donegall Quay. He became successively Assistant Passenger Agent, Chief Parcels Clerk, Chief Delivery Clerk and Chief Accounts Clerk, before being appointed Assistant Shipping Traffic Superintendent in 1955. Mr. Arlow, a native of Belfast, is a member of the Belfast Transport Officials' Club, the Skal Club and Belfast Master Mariners' Club. He takes over his new job at a time of expansion of British Railways cross-channel services.

Captain F. Ardern, D.S.C., who as recorded in our February 14 issue, has been appointed General Agent for British Railways in Ireland, was educated at Watford Grammar School and Lower School of John Lyon, Harrow. He began his sea career in the training ships *Carpentaria* and *Woodarra*. He later served as Fourth to Second Officer with the P. & O. Steam Navigation Company, and obtained his Master's Certificate (foreign-going), in 1928. Two years later, Captain Ardern joined the L.M.S.R. as Second Officer on the Heysham-Belfast Mail service and was promoted Acting Master in 1938. From 1940 to 1946 he served with the Royal Navy and commanded corvettes and frigates. He was awarded the Distinguished Service Cross and was twice mentioned in despatches. He subsequently became Captain of H.M. Dockyard, Vizagapatam, India. On demobilisation in 1946, Captain Ardern resumed command in the Heysham-Belfast service, and on January 1, 1952, he was appointed District Marine Manager & Harbour Master, Holyhead. He is a Younger Brother of Trinity House.

Mr. W. J. Hills, who, as recorded in our April 18 issue, has been appointed Telecommunications Assistant, Signal Engineering Department, British Transport Commission, was born in 1911. He was educated at Wandsworth Technical College and the Polytechnic, Regent Street, London. In 1929 he joined the Telephone Department of Siemens Bros. & Co. Ltd., Woolwich, as a student. After five years' training in telecommunication engineering, he spent three years on the development of various forms of automatic telephone equipment. He joined the Signal Engineer's Department, London Passenger Transport Board, in 1937, as a technical assistant, and was concerned with the conversion of the Board's telephone system to automatic operation. He was also associated with the introduction of train description and indicator equipment. He was made Executive Assistant in 1950, the appointment he now relinquishes.

London Midland Region, British Railways, announces the following appointments:—

Mr. L. D. Taylor as Assistant Motive Power Officer, Euston.

Mr. H. Geoghegan as District Goods Manager, Bolton.

Mr. S. W. Smith as Traffic Assistant to Divisional Traffic Manager, London.

Mr. A. H. Williams as Traffic Assistant to Divisional Traffic Manager, Liverpool.

Mr. T. C. Lawrenson as General Assistant to Manager (Irish Shipping Services), Euston.

Dr. J. T. Crean as Area Medical Officer, Derby.

Dr. G. E. J. Porter as Area Medical Officer, Manchester.

Dr. H. H. Whincup as Area Medical Officer, Liverpool.

Mr. P. T. Somerville-Large has been appointed Deputy Chief Engineer (Civil), Coras Iompair Eireann, as recorded in our February 28 issue, and not Chief Engineer, as incorrectly described in our April 25 issue. The Chief Engineer is Mr. Daniel Herlihy. Mr. Herlihy, and not Mr. Somerville-Large, is responsible for all the board's engineering activities.

Mr. E. M. Read, who, as recorded in our March 28 issue, has been appointed District Mechanical Engineer at Christchurch, New Zealand Government Railways, began his railway career in 1933 as an apprentice-fitter-turner at the Hutt Railway Workshops, Wellington. In 1939 he was transferred to the Locomotive Superintendent's Office, Wellington, and five years later was appointed Assistant Locomotive Engineer. Between 1947 and 1953 Mr. Read held the position of Engineer, Mechanical, and gained considerable experience at the Auckland, Wellington, and Christchurch district offices. Toward the end of 1953 he was appointed Assistant District Mechanical Engineer at Christchurch, later assuming the responsibilities of Acting District Mechanical Engineer, when his senior officer was transferred to Auckland. He is an associate member of the Institution of Mechanical Engineers.

Mr. A. R. Tarr, Secretary of the Railway Officers' Institute, has retired after 40 years' service with New Zealand Railways. He has been succeeded by Mr. D. J. Munro. Mr. J. A. O'Callaghan has been appointed Comptroller of Stores, New Zealand Government Railway, succeeding Mr. I. S. Johnston, who has retired.

Mr. Gordon A. Glennie, European Colonisation Manager of the Canadian Pacific Railway, has been transferred to the Montreal headquarters of the company.

G. W. Murrell, General Agent, Canadian Pacific Railway, Liverpool, has retired after 50 years' service. He is succeeded by P. Spilsbury, General Agent, Manchester. C. A. L. Mansbridge, Chief of the Industrial Department, London, has taken over the Manchester office.

Mr. L. Sykes, Assistant Traffic Manager, Sierra Leone Government Railway, has been appointed Traffic Manager, British Guiana Government Railway.

Mr. John F. Sharkey, Superintendent, St. Louis Division, Illinois Central Railroad, has been appointed Executive General Agent for the system.

Dr. Albert Dobmaier, Chief of the Engineering Department of the German Federal Railway, retired on March 31. He has been succeeded by Mr. Erwin Kessler, President of the Divisional Management at Cologne.

Mr. W. J. Fulton has been appointed Branch Administrator, Belfast, Philips Electrical Limited.

We regret to record the death on April 27, at the age of 53, of Mr. P. H. Muirhead, C.B.E., who until his resignation for health reasons last January was Managing Director of Vickers-Armstrongs (Engineers) Limited. Mr. Muirhead was a Director of Vickers Limited and of other companies.

Mr. Sydney Williams, formerly Signal Engineer, London Midland Region, British Railways, has joined the board of Henry Williams Limited as specialist Signal Director. Mr. H. A. Codd has been appointed to head a new department specialising in electric signalling scheme work. Further reference to these developments has been made elsewhere in this week's news pages.

Mr. I. F. C. Beswick, Divisional Mechanical Transport Officer, Ministry of Transport & Civil Aviation, Edinburgh, has been appointed Divisional Engineer, North-Western Division, British Road Services, in succession to Mr. W. H. Smith, now Rolling Stock Engineer, B.R.S.

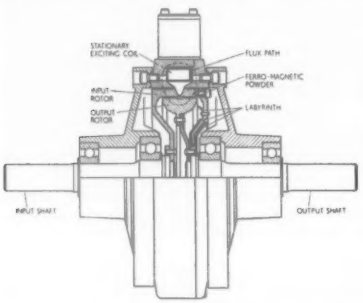
Mr. N. R. D. Gurney, Chief Engineer, Electrical General Engineering Department, Metropolitan-Vickers Electrical Co. Ltd., has been appointed Sales Manager, Plant Department, of that company. He succeeds Mr. R. J. Cochran, who is seconded to special duties.

NEW EQUIPMENT AND PROCESSES

Magnetic Particle Coupling

A DESIGN of magnetic particle coupling has been introduced: initially, it is proposed for industrial machinery drives and automative applications and will be built in torque capacities of from ¼ to 200 lb.-ft.

It is an electro-magnetic form of drive coupling, having the resilience of a fluid flywheel, with the stability of a solid



device. It is a constant torque unit, the torque being independent of speed, and has a safety feature permitting a certain amount of slip when necessary. There are no moving engaging components.

Operation is from 24 or 180 V. d.c. as standard, although other voltages can be arranged.

The coupling contains two rotors, one within the other, but separated by an air gap; one rotor is coupled to the input shaft, and the output shaft to the other. The air gap contains a quantity of ferro-magnetic powder. Around the two rotors is a stationary field member containing an exciting coil, with an air gap between it and the input rotor. A cross-section through the coupling is shown.

When current is applied to the coil, magnetic flux is created which crosses the air gap, causing the particules to be attracted between the pole faces so that torque, or turning force, proportionate to the degree of excitation, is transmitted from the input to output rotors. During the take-off period the coupling operates with a smoothness and an absence of jerk or judder stated to be met only in hydraulic devices. On the other hand, under full excitation, the coupling will become solid, there being no slip, and therefore no generation of heat and no loss of efficiency.

Power consumption varies according to the size of the coupling; for the 50 lb.-ft. coupling it is 72 W.

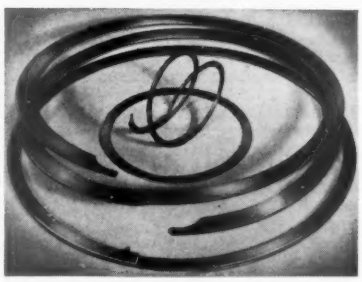
Other advantages claimed are that the torque is independent of slip velocities; that there are no slip rings, the excitation coil being stationary; and there is negligible wear. It will operate as a coupling or brake in either direction and is suitable for any machinery, maintaining constant tension or torque on the workpiece or product. Because of the design, no mechanical adjustments need be made and little maintenance is required.

The manufacturer in this country is S. Smith & Son (England) Ltd., Industrial Products Department, Witney, Oxon.



Retaining Rings

BY agreement with the Ramsey Corporation of St. Louis, U.S.A., rights to manufacture and distribute the Spirolox retaining ring in England and other countries have been granted to the manufacturer. It is being manufactured in very large quantities in the U.S.A. The design is stated to have advantages over existing types.



The ring consists of a double turn, or spiral of hardened and tempered and polished top-grade spring steel which has rounded edges to prevent fretting of grooves. It is crimped in the space between the two ends so that it lies flat in its groove.

If the retaining ring is designed to spring outwards into a housing, the free outside diameter exceeds the closed or working diameter by a calculated amount; for an inspringing ring the free bore diameter is correspondingly smaller than the shaft groove diameter.

Spirolox rings are provided with notches or slots at each end for removal, an ordinary screwdriver being all that is required for their removal.

Fitting is simple: one end of the retaining ring is put into the groove and the whole ring is then wound or spiralled in. As the last end enters, there is a definite "snap" which indicates that the ring is properly fitted. For removal, one end is eased out of the groove with a screwdriver and the retaining ring is then unwound.

Assembly line fitting can be speedily carried out by means of simple tapered plugs or sleeves which allow the retaining rings to be pushed straight into their grooves. The normal size range is from ½ in. dia. upwards, and although 10 in. is the normal upper limit of diameter, much larger diameters are possible without expensive tooling costs. Diameters and thicknesses are related as far as possible to existing standard groove sizes, and the rings are manufactured in normal, and specially thick series where large side thrusts have to be considered.

The manufacturer in this country is Wellworthy Limited, Lymington, Hants.

Machine Tool Coolant Equipment

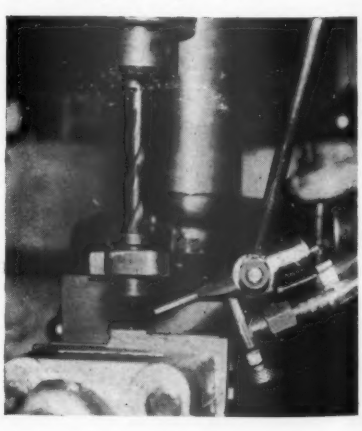
A SYSTEM of spraying cooling oil onto machine tools is now available, and is known as the Jaco Oil-Mist Coolant equipment. Applications in railway workshops include, for example, radial drilling machine, planers and so on where it is not practicable to fit a flood coolant system for very large work. It could also be used to spray a fine soluble oil mixture on and around a tool when cutting cast iron, thereby damping down any fine dust arising from the cutting action.

The Jaco System consists of an automatic miniature spray gun and a container for the coolant. The guns are controlled by varying the air supply to the nozzle by a valve operated by cam-solenoid-hand or foot pedal. Any number of guns can be controlled by one air valve.

Installation is effected by connecting the pressure air line via the operating valve to the air inlet on the gun, and coupling the fluid inlet on the nozzle to the outlet pipe on the tank by a plain piece of piping. The fluid supply is permanently connected and is controlled by the gun itself.

The equipment can be used in any position and operates on a pressure of 50-150 lb. per sq. in. No pressure regulator is required, and the fluid supply is gravity-fed. Providing the controls are correctly set no air contamination will occur. It can also be used for spraying oil for rust prevention on machined surfaces as they are being cut.

The price of the equipment complete with ½-gal. coolant tank, 2-ft. fluid piping, and 4-ft. air hose including connections is £3 19s. 6d. The distributor in this country is Stanley Jevons Tool Company, Avon Street, Birmingham, 11.



Railway Modernisation Plan

Government agreement to B.T.C. proposals to expedite the modernisation programme and economy measures

A meeting between the British Transport Commission and the three railway trade unions, under the chairmanship of Sir Brian Robertson, Chairman of the B.T.C., was held on May 6, to discuss Government reaction to economy proposals submitted by the B.T.C. After the meeting the trade union representatives reported to their Executive Committees and the text of letters exchanged between Sir Brian Robertson and Mr. Harold Watkinson, Minister of Transport & Civil Aviation, was released.

In stating the economy proposals the Commission was prepared to effect, Sir Brian Robertson said, in a letter dated May 2:

"The Prime Minister said at the meeting on April 22:—Provided that the B.T.C., together with the three railway unions, were prepared to effect the maximum economy in operation and to join in ensuring the most efficient use of manpower, the Government were prepared to re-examine at once the programme of modernisation and to give any necessary support to the reductions in uneconomic services as well as to consider other points put forward by the Chairman of the Commission.

Discussions on these matters have since taken place between us. The proposals which the Government has undertaken to examine have been presented by the Commission as being entirely justifiable on their own merits. They are steps which, in the view of the Commission, should be taken in any case, but, by taking them now, the Government would be helping the Commission at a time of particular difficulty.

As to action by the Commission, you are aware of the drive which the Commission have made to promote work study and other recognised techniques for improving productivity. With the co-operation of the trade unions, the British Railways Productivity Council and the Commission's work study centre at Watford are beginning to show results and there will be increasing benefits as time goes on. The measures to improve productivity will be prosecuted with vigour.

There is not at this time scope for obtaining a large increase in receipts by raising fares and charges and, for this reason, no general increases are contemplated in the near future. However, this statement should not be taken to preclude action by the Commission within their powers under the freight charges scheme of 1957 to improve their receipts from selected traffics. As regards passenger fares, the Commission propose to make limited increases on certain services and intend in the near future to make an application to the Transport Tribunal for an increase in their charging powers which would enable them to do this. No increase in fares could, in any event, be made during the next four or five months.

There remains the question of reduction in working expenses. Whatever may be the action taken by the Government or by the Commission under the headings mentioned above, it is certain that no offer to improve wages and salaries will be possible during 1958 unless the Commission make substantial reductions in the working expenses of British Railways. The Commission accept this position and undertake to fulfil their part in this respect.

It is not an easy part, but an extremely difficult one. The receipts of British Railways during the past six months have been below expectations, mainly due to the slowing down in the general rate of economic activity. The Commission are, therefore, now confronted by a task of double magnitude: first, to restore the level of their current net receipts; secondly, to make possible a review of railway wages and salaries later in the year. To deal with this double task the Commission will carry out a comprehensive programme, some parts of which are already in hand, to reduce their working expenditure.

The steps involved are of a very wide nature and cannot easily be catalogued. They embrace economies under the following heads, among many others.

Drastic Reduction of Train Miles

Adjustments in the freight services will be made to correspond with the level of freight traffic. The Commission will not, however, reduce the standard of freight service offered, nor will reductions be made in their express services for the carriage of general merchandise and export traffics.

Reductions are also being made in passenger services, including certain express services. In further extension of this policy, the Railway Regions have been required to make cuts in their overall passenger train mileage on the winter services.

Reduction of Repairs to Freight Vehicles

100,000 wagons will be scrapped this year.

Reduction of Maintenance Expenditure

Maintenance expenditure on buildings, rolling stock, etc., will be reduced where this can be done without detriment to safety and good service.

Elimination of Unremunerative Services

Consideration is being given at this time to the withdrawal of services from more than 30 lines involving a total net annual saving of some £500,000. A comprehensive review of all railway services, passenger and freight, now in hand, will be pressed forward with a view to the speediest possible elimination of those of which the retention is unjustifiable. The offer made by the Government to assist in the acceleration of the existing procedure for closing down or withdrawing unremunerative lines and services is welcomed.

Reduction of Shipping Services

Some cross-channel shipping services are unremunerative. It is proposed to discontinue the Newhaven-Dieppe passenger service during the winter months and reductions will be made in other services.

Specific Reduction of Staffs

The numbers employed on British Railways have already been reduced by about 6,000 by comparison with March, 1957. Further substantial economies in manpower will be made during the year. In so far as these staff reductions cannot be covered by normal wastage, they will be dealt with under the agreed redundancy arrangements.

As you are aware, the trade unions gave the Prime Minister explicit assurances of their willingness to support measures for the improvement of the efficiency and productivity in British Railways. I am sure that they will be ready to play their part by co-operating with the Commission in the specific measures mentioned above.

On May 1, 1958, the Commission held a special meeting with the General Managers of the Railway Regions and gave instructions for action on the above lines to proceed. They were assured by the General Managers of their determination to carry out the Commission's instructions in spite of the great difficulties involved therein."

In a reply dated May 5, Mr. Harold Watkinson outlined the Government reaction to the Commission's proposals, and said:

"Since the meeting with the Prime Minister on April 22 we have had a number of discussions about the best way to give effect to the proposals which the Prime Minister then made. In this letter I am setting out the conclusions the Government have reached in the light of these discussions and your letter of May 2, 1958.

In connection with the Government's action taken in September, 1957, to restrain inflation and to control the level of public investment the Commission's investment programmes for 1958 and 1959 were limited to £170 million and £175 million respectively. Since then the railway regions have been able to show that they can accelerate the pace of modernisation, particularly in 1960 and 1961. As a result the phasing of the modernisation plan for the railways has been under study of the Commission, my Ministry, and the Treasury for some time. This broad question must be considered in relation to the requirements in the public sector as a whole and cannot be finally decided now.

The study that we have just made following the Prime Minister's meeting has, however, shown that selective increases in capital investment now could make an improvement in the Commission's net revenue which would begin to accrue in the next 12 months.

You have set out the following ways in which you could bring forward projects that would yield a quick return:—

(*a*) £7,000,000 would be used to avoid any slowing down in the programme for new works and plant in 1958 and 1959. This would reduce costs and accelerate financial returns on the schemes involved.

(*b*) £6,000,000 would be allocated for diesel locomotives and multiple-unit trains. Apart from the immediate financial benefits of introducing diesel traction, an important reason for accelerating the diesel programme is that the Commission, having successfully negotiated with the unions the manning agreement for diesel locomotives, naturally wish to reap the benefits that flow from this agreement as soon as possible.

(*c*) £12,000,000 would be allocated to projects giving the most rapid financial return, including the contraction of marshalling yards and the modernisation of goods depots, the provision of facilities for diesels and to the improvement of signalling systems such as automatic train control.

At the meeting with the Prime Minister on April 22 he indicated that, provided the British Transport Commission, together with the three railway unions, were prepared to effect the maximum economy in operation and to join in ensuring the most efficient use of manpower, the Government

were prepared to re-examine at once the programme of modernisation and to give any necessary support to the reductions in uneconomic services as well as to consider other points put forward by you.

You have now supplied me with a statement of what the British Transport Commission, with the help of the unions, are prepared to do, and on the understanding that the unions will play their full part the Government are prepared to authorise additional investment, within the total public sector programme envisaged last September, of £25,000,000 over the two years 1958 and 1959 so that the Commission may accelerate the more remunerative items in their modernisation programme to which I have referred above.

In addition, the Government, in carrying out its current review of long-term investment in the public sector, will be prepared to consider how far it may be practicable to provide for more rapid completion of the modernisation programme in 1960 and subsequent years.

The Commission also put forward proposals for relieving the railways of certain inherited obligations in relation to bridges carrying roads over railways and level crossings, which they had already referred to in their proposals for the railways included in the White Paper issued in October, 1956. The Government recognise that the Transport Commission have for some time felt that their obligations in these respects ought to be adjusted in the light of modern conditions, and they have sympathy with the Commission's desire for a review. They will accordingly examine the question on its merits and as a separate matter, with a view to seeing whether any changes are justified. They are anxious that the Commission's road bridges and level crossings should be modernised as far as possible in step with the road modernisation programme. As regards level crossings, the first task must be to install the new types of automatic level crossing gates which will save manpower and give better traffic flow.

As regards freight traffic, more could be done to convince industry that if it wishes to have at its service a modern and efficient railway system, industry must play its part in seeing that where the railways offer a competitive service full use is made of it. I propose that you and I should meet the leaders of the appropriate organisations to discuss how, as railway modernisation gathers speed, the railways can attract a much greater share of commercial traffic of all kinds as they must do if they are to justify the very large sums of public money which are being invested in them.

As regards passenger services, the Government is prepared to support the Commission's proposals for reducing or withdrawing unremunerative services where the demand for these is disappearing or is likely to be met more economically by other forms of transport. I propose to have early discussions with the Chairmen of the Transport Users' Consultative Committees to see whether any improvements can be achieved in their procedure which will enable you to effect the economies more quickly, while at the same time providing reasonable facilities to local interests to have their views properly considered."

CRAVEN BROTHERS (MANCHESTER) LIMITED, CHANGE OF ADDRESS.—The address of Craven Brothers (Manchester) Limited London office is now Bridge House, 181, Queen Victoria Street, London, E.C.4 (Tel. City 2902, telegraphic address "Cravtool Cent London").

Henry Williams Limited Appointed Integra Agents

Tyer & Co. Ltd., railway signalling engineers, of Dalston, a member of the Southern Areas Electric Corporation Group, has terminated its licensing agreement with Integra A.G., Zurich. The agreement has been taken up by Henry Williams Limited, Darlington, who has been appointed sole agent and exclusive licensee for Integra railway signalling systems and all associated equipment in the U.K., Eire, Crown Colonies, and Protectorates. Tyer & Co. Ltd. will in future concentrate on the development and extension of its own specialised ranges of signalling equipment.

Henry Williams Limited is one of the largest manufacturers in the U.K. of permanent way material and mechanical signalling components, and probably the largest manufacturer in the world of drop forged junction and lift fishplates.

Integra A.G. of Zurich was established as an independent railway signalling firm in Switzerland after the 1914-18 war, and original production was designed to suit the requirements of the Swiss Federal Railways and the Swiss private railway organisations.

Henry Williams Limited has always concentrated on mechanical signalling but the directors now feel that with the acceleration of electric and automatic devices for signalling, it is necessary to be able to supply the most modern equipment and they consider that the Integra designs are the most up-to-date available at the present time.

Mr. Sydney Williams, the former Signal Engineer, London Midland Region, British Railways, has joined the board of Henry Williams Limited as Signal Director; his long experience of railway problems will be an additional help to the new arrangement.

The agreement with Integra A.G. covers the manufacture of the Integra equipment in England and a start has already been made at the Darlington works. A new department has been formed under Mr. H. A. Codd to specialise in electric signalling scheme work, and premises have been purchased in the Watford area. Production is expected to start this month.

Relay interlocking panel at Keymer Crossing

Hitherto the Southern Region has followed the practice adopted by the Southern Railway and adhered to the lever frame for all new power signalling work; since 1929, however, electric interlocking has always been used instead of mechanical. It was announced some time ago that relay interlocking panels had been adopted for the work to be done in connection with the extension of electrification to the Kent Coast. The one seen in the accompanying illustration, the first to be put in service in the Region, is nevertheless not on that route but is located in the Keymer Crossing signalbox, which controls the junction of the Brighton and Eastbourne main lines; it has replaced a mechanical type frame. The crossing gates continue to be operated manually by the usual type of equipment. This box is a very busy one, as both road and rail traffics are considerable, particularly at certain seasons. Colour-light signalling was brought into service between Copyhold



Relaying interlocking panel in Keymer Crossing signalbox, Southern Region

Junction (Haywards Heath) and Preston Park (Brighton) on October 6, 1932, when the signalbox at the junction itself was closed altogether and the working concentrated in the one at the crossing. The new equipment has been manufacured to the requirements of Mr. L. J. Boucher, Signal Engineer, Southern Region, by the Westinghouse Brake & Signal Co. Ltd., of London and Chippenham.

Summer Train Services in Switzerland

Some important improvements are planned to train services in Switzerland, operative from the introduction of the summer timetable, on June 1. A further addition to the "Trans-Europe Express" series of international diesel-electric trains will be the "Lemano," from Milan at 9.10 a.m. to Lausanne and Geneva, reached at 1.17 p.m.; it will return at 5.38 p.m. and arrive in Milan at 9.44 p.m. In Switzerland this train will cover the 90.5 miles between Brigue and Lausanne each way non-stop in 88 min. and the 37.4 miles between Lausanne and Geneva in 35 min., but these times will not be quite as fast as those of the principal Swiss electrically-hauled services. The heavy "Simplon-Orient Express" will be speeded up by 36 min. eastbound and 26 min. westbound on its journey through Switzerland, with a time of 95 min. for the 90.5 miles from Lausanne to Brigue and 94 min. in the opposite direction, including, from July 1 to September 10, an intermediate stop at Montreux.

Over the 37.4 miles between Lausanne and Geneva, six trains will run daily in 33 min., five in 34 min., six in 35 min. and three in 36 min. In all, 48 trains daily in Switzerland will be booked to make runs timed at 60-69 m.p.h. start to stop, with an aggregate mileage of 1,618. The eastbound "Rhone-Isar" will be held from the present 12.37 p.m. starting time until 12.45 p.m., to make a new French connection at 10.15 a.m. from Lyons, and will cover the heavily-graded 178.3 miles to Zurich in 3 hr. 8 min., including stops at Lausanne and Berne.

"Gotthard Express"

A development on the Gotthard main line will be the new "Gotthard Express" service. The existing 12 noon from Basle is to start at 11.20 a.m. and leave Lucerne at 12.51 instead of 1.36 p.m.; it will then call only at Brunnen to Bellinzona, and reach Lugano at 3.48 p.m. and Chiasso at 4.15 p.m., 79 min. earlier. A new train is to leave Zurich at 1.11 p.m., with through coaches from Hamburg and Berlin (the first post-war restoration of a through service from Berlin to Milan) to Genoa. For the first time on record the 116.1-mile run from Zurich to Bellinzona will be made non-stop in 146 min.—47.7 m.p.h., including the 18-mile climb at 1 in 40 to the Gotthard tunnel. At Chiasso, reached at 4.30 p.m., this train will join the "Gotthard Express" and the combined train will reach Milan at 5.35 p.m.

In the reverse direction the existing 11.31 a.m. from Milan will start at 11.38 and become the "Gotthard Express." From Chiasso the Zurich portion will be the first away, at 12.42 p.m., with through coaches from Genoa for Hamburg and Berlin, and calling only at Lugano and Bellinzona, with a non-stop run from there in 152 min., will reach Zurich at 4.5 p.m. The "Gotthard Express" proper will start from Chiasso at 12.55 p.m., call at Lugano, Bellinzona, Göschenen, Fluelen and Brunnen, and reach Lucerne at 4.40 p.m., an acceleration of 25 min. from Milan.

New Service to Austria

In the north-east, the fastest time ever scheduled over the main line between Zurich and Sargans will be that of the new Austrian streamline diesel service between Zurich and Vienna over the Arlberg route, via Buchs, the "Transalpin," which will run non-stop over the 56.7 miles from Zurich to Sargans in 62 min., and will return in 65 min.; returning at 11.35 a.m., it will be into Zurich at 11.13 p.m. Between Basle and Zurich the 10.10 a.m. from Basle will start at 10.23 a.m. and be accelerated 14 min., reaching Zurich at 11.25 a.m.

G.E.C. & S.G.E. at the Brussels Exhibition

The General Electric Co. Ltd. and Siemens & General Electric Railway Signal Co. Ltd. have made several contributions to the collective exhibit representing the British Electrical & Allied Industry at the 1958 Brussels Universal & International Exhibition.

Scale models exhibited by the General Electric Co. Ltd. include three of electric and diesel-electric locomotives to a scale of ½ in. to the ft. One of these is of a "4E" class, 3,030-h.p., 3,000-V. d.c. locomotive of the South African Railways, 40 of which were built by the North British Locomotive Co. Ltd. and equipped by the G.E.C. The other two show an 800-h.p. diesel-electric locomotive of type 1 and a 1,000-h.p. diesel-electric locomotive of type 2 for British Railways, both of which are being built by the North British Locomotive Co. Ltd. Complete power equipments for 10 of the type 1 design, including Paxman diesel engines, are being supplied by the G.E.C. The type 2 locomotives of which 38 have been ordered, will have N.B.L./M.A.N. diesel engines and G.E.C. electrical equipment.

Signalling Equipment

The Siemens & General Electric Railway Signal Co. Ltd. has participated in the display of signalling equipment by showing a searchlight signal, a long-range four-aspect colour light signal with three-way direction route indicator, and a level crossing warning signal.

All of these colour light signals are seen in operation, the sequence of aspects being controlled by a S.G.E. fixed time controller of the type supplied by the company for road traffic signals. The level crossing warning signal consists of two red lights, facing oncoming road traffic, which flash alternately to give the effect of swinging a hand lamp.

Parliamentary Notes

M.P.s and Railway Claim

Mr. Harold Watkinson, Minister of Transport & Civil Aviation, attended a joint meeting of the Conservative Finance and Transport Committees under the chairmanship of Sir Toby Low (Blackpool N.—C.) in the House of Commons on April 29.

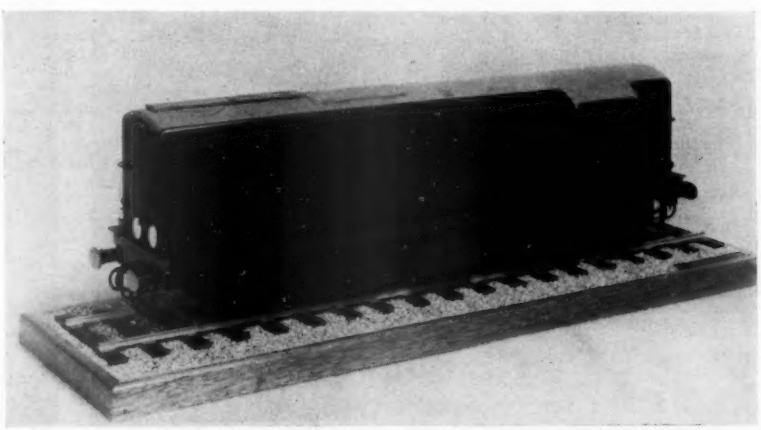
The trend of the discussion was that members supported the policy of the Minister of insisting that there must be agreement in the industry on practical plans to effect further economies before there could be any question of the Government considering the rephasing of the modernisation programme so as to bring forward some of its more remunerative parts.

Railway Station Car Parks

Lord Gisborough asked the Government in the House of Lords on May 1 how many motor car vehicles were reported stolen from the vicinity of railway stations over the last year; how many stolen vehicles were found abandoned in or around service camps, and of these how many had been reported stolen from railway stations.

Lord Chesham, Lord in Waiting: I regret that the information required is not available.

Lord Gisborough: I can understand that. But is the noble Lord aware that at the main line stations, and Darlington, perhaps, is a good example, there are no adequate parking facilities for those who may be going away for two or three days, and who wish to leave the cars at the stations? Motorists are charged 1s. for parking, but their cars are not looked after. The other day mine was stolen



Model of a North British type 1 800-h.p. diesel-electric locomotive with G.E.C. equipment for British Railways at the Brussels Exhibition

within two hours of my leaving it there. Are there plans afoot for improving parking facilities at these main line stations? When I reported my loss to the police, I was told that my car would probably turn up at one of the Army camps. Sure enough, it was found abandoned at a camp near Barnard Castle; and I was told that a bus had been taken away and found in one of these camps.

Lord Chesham: I think that the matter referred to does not strictly arise on this question. If the noble Lord would like to put down a further question on the subject, I should be delighted to answer it.

Questions in Parliament

Railway Brake Conversion

Mr. Denis H. Howell (All Saints, Birmingham—Lab.) asked the Minister of Transport & Civil Aviation on April 30 if he would give the reasons for the cut back in the railway brake conversion scheme; and what proportion of the total sum allocated to the British Transport Commission for purposes of modernisation he expects to be used for paying compensation for orders cancelled as a result of the slowing down of this plan.

Mr. Harold Watkinson: The programme for converting existing wagon stock was reduced as a result of the capital investment cuts for 1958 and 1959. In addition the programme for fitting 16-ton mineral wagons has been interrupted because it has been found that the braked wagons cannot be handled by some of the older type tippler gear at industrial plants until some modification of the gear has been carried out. A substantial cut back in the programme as a result of this difficulty is unlikely. Any financial arrangements to be made in respect of uncompleted contracts are a matter for the Commission and their contractors, but I am advised by the Commission that the cost to them of the revision of the contracts will be very small in relation to the total sum.

Mr. Howell: Is the Minister aware that there has been considerable anxiety in some quarters and on both sides of industry about the likelihood of men being put out of work because of these two factors and the possibility of large sums of money being involved by the payment of compensation? Can the Minister, in giving that statement, which we should welcome, assure us that the British Transport Commission and his Ministry will do their best to minimise both of these factors and get this work moving again quickly?

Mr. Watkinson: Certainly, Sir.

Commission's Railway Assets

Mr. Graham Page (Crosby—C.) asked the Minister of Transport & Civil Aviation on April 30 whether he would initiate legislation to oblige the British Transport Commission to sell all its assets other than the permanent way and signalling apparatus, and for Her Majesty's Treasury thereafter to maintain the latter upon some basis similar to that applying to trunk roads.

Mr. Harold Watkinson: No, Sir.

Mr. Graham Page also asked the Minister on April 30 if he would state an estimated apportionment of the assets of the British Transport Commission between the permanent way with all signalling apparatus on the one hand and all its other assets on the other hand.

Mr. G. H. R. Nugent, Parliamentary Secretary, in a written reply: If my hon. friend has British Railways particularly in mind, table V-4 of the Commission's 1956 accounts gives in broad terms the book value of permanent way, buildings, etc., at about £903 m., and that of rolling stock, etc., at about £413 m.

Mails Delayed by Rail Modernisation

Mr. John Henderson (Cathcart—U.) asked the Postmaster-General on April 30 if he was aware of the inconvenience caused to the business community in Glasgow by the late delivery of mail from Leicester and Nottingham which frequently is not delivered to Glasgow until the afternoon following the day of posting; and what steps he was taking to have a regular morning delivery.

Mr. E. Marples: Yes, Sir. These delays, which I regret, have been due mainly to the late running of the train used, especially during the bad weather in recent months. We are in close touch with British Railways about this matter, and I am hopeful that there will be an improvement.

Mr. Henderson: In the event of the Postmaster-General not getting a satisfactory solution from the Ministry of Transport, will he seek some other means whereby this very important business connection between England and Scotland could be improved?

Mr. Marples: I shall make strong representations to the Minister of Transport & Civil Aviation, but the matter is not very easy, because the modernisation plans on the railway involve a certain amount of engineering work between Warrington and Euston, though, I think, that we shall, ultimately, have the benefit of that work.

Mr. J. Harrison (Nottingham E.—Lab.): Has the Minister heard of any other delays caused in transporting mail on British Railways, apart from this instance? Are these delays special to this route?

Mr. Marples: Delays are largely between Warrington and Euston, and this, of course, affects a number of places. As I said, it arises from the modernisation plan.

GEORGE COHEN AT THE MECHANICAL HANDLING EXHIBITION.—At the 1958 Mechanical Handling Exhibition, which opens at Earl's Court, London, on May 7, George Cohen Sons & Co. Ltd. will be represented at two stands besides an exhibit in the outside display arch. One stand is to be devoted to the range of Jones cranes manufactured by the associated company in the 600 Group, K. & L. Steelfounders & Engineers Limited, of Letchworth, Hertfordshire. Products on the other stand will give an indication of the wide range of equipment supplied by the Lifting & Mechanical Handling Department of the company.

New Station at Enfield Town, Eastern Region

(*see our April 25 issue*)



Frontage of new station at Enfield Town, opened on April 25



Booking hall showing illuminated train indicator

Staff and Labour Matters

Railway Wage Claim

A further meeting took place between the Chairman and representatives of the British Transport Commission and representatives of the three railway trade unions on May 6 to discuss the latest position arising from the Unions' wage claims. Sir Brian Robertson, the Chairman of the Commission, had further talks on May 5 with the Minister of Transport in regard to proposals for economies on the railways by means of which it is hoped to find a solution to the deadlock which has been reached in connection with the Unions' claims. After the meeting on May 6, the trade union representatives reported to their executive committees, and a further meeting was held on May 7, at which Sir Brian Robertson informed the trade unions that he was prepared to agree in October that some improvement in railway wages and salaries should be made. While he was not willing to define the size of this improvement, he said that in fixing it the Commission would wish to take account of the comments of the Railway Staff National Tribunal.

He further offered to meet the trade unions in mid-July to review the progress of events and re-assess the position. At such a meeting a review could be made of the general economic situation, of the current state of the Commission's finances and of any other factor which might point towards an earlier improvement in the wages level. He regretted, however, that he could not make an offer of an immediate improvement.

Strike of London Busmen

Attempts to avert the threatened strike of London busmen called by the Transport & General Workers' Union proved unavailing and the strike commenced at midnight on May 4. During the first day of the strike not one of London Transport's 8,400 buses left its garage. In consequence there was a big influx of private cars in central London and tube trains were crowded.

On May 1 Sir John Elliot, Chairman of the London Transport Executive, wrote to Mr. Frank Cousins, the General Secretary of the T. & G.W.U., in which he said:

"I understand that a mass meeting of busmen is to be held in London to-morrow (Friday) and I take this opportunity to make it clear to you and to them that our proposal remains open in a further endeavour to avoid the hardships which are inevitably involved in a strike and which I am confident nobody wants." The proposal related to London Transport's offer made on April 28 which was to implement the Industrial Court award of 8s. 6d. a week increase to central busmen, back-dating it to March 12, to review in the autumn the wages of all grades to whom no award was made, and to accelerate the review of wages of Green Line single deck coach drivers. The Chairman stated, "my colleagues and I genuinely believe that these proposals provide a fair and honourable way of resolving the difficulty."

The General Secretary of the T.G.W.U. addressed a letter direct to all the London busmen in which he said:—

"It is clear that unless something of a favourable character develops, we have to enter upon a grim struggle. The union has made every effort to arrive at a just settlement and has acted with tolerance and restraint without any satisfactory result. We are now left with no alternative but to take the extreme course of withdrawing labour."

At a mass meeting of London busmen in the Empress Hall on May 2, a resolution was passed pledging full support for the strike.

Provincial Bus Claim

At a meeting of the National Council for the Omnibus Industry on May 2 the National Secretary of the Passenger Transport Section of the T. & G.W.U. presented a claim for increased wages for approximately 100,000 busmen employed by private firms and companies controlled by the British Transport Commission in the provinces. The employers will reply to the claim at a meeting of the Council on June 9.

On April 30, a similar claim on behalf of 77,000 municipal busmen was lodged. The company claim includes, however, an application for a pensions scheme comparable to that of the British Transport Commission for other sections of its staff. Municipal busmen already have superannuation arrangements.

A.E.U. Wage Claim

Resolutions seeking a substantial increase in pay and renewed pressure for a 40-hr. week for manual workers in the shipbuilding and engineering industries were passed unanimously at a meeting at Great Yarmouth last week of the National Committee of the Amalgamated Engineering Union.

Contracts and Tenders

Diesel motor coaches, locomotive spare, and rolling stock for the Argentine State Railways

Ganz & Co. Ltd., Budapest, has received a contract from the Argentine State Railways for 46 narrow-gauge diesel motor coaches and 44 trailer coaches for the General Belgrano Railway.

The General Electric Locomotive & Car Equipment Company, U.S.A., has received a contract for the supply of spares to the value of U.S.$1,350,000 for the diesel-electric locomotices in use on the General Mitre and General Belgrano Railways.

Strojexport of Prague is to supply welding equipment, compressors, hydraulic presses, lathes, and other machinery to the value of U.S.$781,000, and the American Car & Foundry Company is to supply 319 specially-designed hopper wagons; 285 50-ton for broad gauge, and 34 45-ton for medium gauge.

W. H. Dorman & Co. Ltd. has received an order from the Ministry of Supply for 30 Dorman 6KUF type diesel engines, all of which are to be delivered during the present year. The order is valued at £40,000.

The Gregg Car Co. Ltd., Belgium, has received an order from the Sudan Railways for 200 35-ton covered bogie goods wagons.

British Railways, Eastern Region, have placed the following contracts:—

W. R. Payne & Sons Ltd., Shipley, Yorks: cleaning and painting of signals, signalboxes, station buildings, goods yards, sheds, offices, bridges at Weeley, Great Bentley, Thorington, Arlesford, Wivenhoe, Hythe and St. Botolphs Stations

Cowans, Sheldon & Co. Ltd., Carlisle: supply, delivery and installation of one 53-ft. dia. vacuum operated articulated turntable at Kings Lynn Station

W. & C. French Limited, Wisbech, Cambs: strengthening of bridge No. 19 over Keadby and Stainforth Canal between Stainforth and Thorne South Stations.

British Railways, London Midland Region, have placed the following contracts:

W. G. Kaleyards Limited, Chester: patent glazing, renewal of roof coverings, motive power depot, Patricroft

C. A. Horton Limited, Brierley Hill, Staffs: reconstruction and widening of bridge No. 87 at Bloxwich Lane, Water Orton, on Wolverhampton line

Edward Wood & Sons, Derby: conversion of engine shed into welding shop, Far Cotton, Northampton

Hughes & Ellison Limited, Liverpool 1: supply and erection of steelwork, extension to Birkenhead Central Carriage Shed, Wirral-Mersey electric lines

Robert Heyworth & Co. Ltd., Manchester 21: accelerated low pressure hot water heating, welding shop, Castleton C.M.D.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call for tenders as follow:—

From Iraq:

5,000 hardwood crossing sleepers for metre gauge suitable for the hot, dry Iraq climate to various sizes.

The issuing authority and address to which bids should be sent is the Director-General, Iraqi State Railways, Baghdad. The closing date is May 19, 1958. The Board of Trade reference is ESB/11014/58.

Further details regarding the above tender, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the call for tenders from Portuguese East Africa for 120 drop-sided 40-*tonne* open wagons recorded in our issue of April 4, 1958, has been cancelled.

The Director-General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of 700 laminated bearing springs, and 1,400 cast-steel roller-bearing axleboxes. See Official Notices on page 556.

RANSOME & MARLES NEW SOUTH WEST AREA OFFICE.—Ransome & Marles Bearing Co. Ltd. has moved its South West area office from Bath Parade to larger premises at Transom House, Bristol. Telephone numbers are now 20437 and 20438.

Notes and News

Portable Barrel Pump.—In the reference on page 460 of our April 18 issue of the portable barrel pump manufactured by the British Central Electrical Co. Ltd., it was stated in error, due to misinformation, that the thermal cut-out was 60° F. It is in fact 160° F.

Institute of Transport Congress in Dublin.—The Institute of Transport Congress is to be held in Dublin this year, from Tuesday, June 3 (assembly) to Friday, June 6, with headquarters at the Tresham Hotel. The programme will include papers by Mr. T. C. Courtney, Chairman, Coras Iompaire Eireann, and by Sir Brian Robertson, Chairman, British Transport Commission, on the mornings of June 4 and 5 respectively, and also visits to transport installations.

"Lilac Time."—British Railways London Midland Region (London) Amateur Musical Society presented "Lilac Time," the play with music by Franz Schubert, on May 1, 2 and 3 at the Scala Theatre, London. It was the first production for the society by Mr. Victor Cook. Cyril Howcroft played the part of Schubert, and Judith Pearson gave a charming performance as Lili. George Harrison, as Christian Veit, her father, delighted the audiences with his gay antics. The leading players were well supported by a large chorus, and the scenery and costumes were particularly praiseworthy for an amateur presentation.

Anglo-Irish Railway Officers' Golf Match.—The annual golf match between members of the Coras Iompair Eireann and Great Western Railway (London) Golfing Societies for the K.W.C. Grand Cup was played at Parknasilla, Co. Kerry, last week-end and resulted in a win for the Coras Iompair Eireann by 4½ matches to 1½. The accompanying illustration shows players of both Societies on the steps of the Great Southern Hotel at Parknasilla. Left to right:—

Front row: Dr. T. Courtney, Medical Officer, C.I.E., Mr. D. W. M. Wilson, Road Motor Engineer, W.R., Dr. C. T. Newnham, Regional Medical Officer, W.R., Messrs. D. Herlihy, Chief Engineer, C.I.E., K. W. C. Grand, General Manager, W.R., T. C. Courtney, Chairman, C.I.E., G. E. Orton, W.R., J. W. Davis, C.I.E., R. A. Smeddle, Chief Mechanical & Electrical Engineer, W.R., J. D. Swain, Treasurer, W.R., and K. F. McAlpin, W.R.

Second row: Dr. M. Hegarty, Chief Medical Officer, C.I.E., Messrs. T. P. Hogan, Director, C.I.E., F. Lemass, General Manager, C.I.E., D. Stewart, Traffic Manager, C.I.E., S. B. Taylor, Chief Secretary, B.T.C., W.R., and D. J. Tymms, W.R.

Back row: Messrs. C. J. Rider, Public Relations & Publicity Officer, W.R., J. Glendon, C.I.E., J. W. J. Webb, Regional Accountant, W.R., L. Collins, Assistant Chief Mechanical Engineer, C.I.E., F. C. Hockridge, W.R., B. McGrath, Legal Adviser, C.I.E., R. M. Baker, Accountant, Hotels Section, C.I.E., A. Malcolm, Chief Accountant, C.I.E., and Sir Leslie Ford, General Manager, Port of London Authority.

Mr. H. E. A. White, Running & Maintenance Officer, W.R., was also present.

Glenfield & Kennedy Holdings Limited.—The group net profit of Glenfield & Kennedy Holdings Limited, hydraulic and general engineers, for the year ended December 31, 1957, was £356,438 (£421,649). Subsidiary companies retain £57,174 (£87,309), leaving a net profit for the holding company of £299,264 (£334,340). The final dividend is 15 per cent, making 20 per cent for the year.

Films on Materials Handling.—The National Joint Committee on Materials Handling has compiled a list of films on materials handling. This is now obtainable from the Secretariat, National Joint Committee on Materials Handling, 20-21, Took's Court, Cursitor Street, London, E.C.4. Some 60 titles are listed showing the size and running-time (where known), the source of film and a brief synopsis of its purpose and audience suitability.

Mechanical Handling in Transport: British Transport Exhibit.—The British Transport Commission information bureau at the Mechanical Handling Exhibition, Earl's Court, London, which closes on May 17, features a model layout, 18 ft. × 16 ft., showing the rail, road, docks and waterways operations of the Commission. There is also a display of photographs and static models depicting various forms of mechanical handling equipment used by British Railways, British Road Services and British Transport Docks and Waterways. Staff are in attendance at the information counter to answer visitors' questions concerning mechanised services provided by the Commission for trade and industry.

Model of Mombasa Harbour at Mechanical Handling Exhibition.—Mechanical handling methods which have been applied to speed the turn-round at Kilindini Harbour (Mombasa) are demonstrated in a model to be shown by the East African Railways & Harbours Administration at the Mechanical Handling Exhibition, Earls Court, London, which closes on May 17. The harbour handles over 1,000 ships and 3,000,000 tons of cargo annually. Palletisation has been adopted to a considerable degree and is widely used in the handling of coffee, cotton and sisal. A representative of the Landing & Shipping Company, associated with E.A.R. & H., which deals with traffic passing through the harbour will be in attendance at the stand.

Superheater Company £463,050 Capitalisation.—Permission of the Capital Issues Committee has been obtained by the Superheater Co. Ltd. for a capitalisation of £463,050 of reserves in a one-for-one scrip issue to shareholders. The issue if agreed at an extraordinary general meeting to be held on May 29, will be in the form of 728,100 ordinary shares to the ordinary holders and 1,124,100 "A" ordinary to the "A" holders.

F. E. Weatherill Limited at Mechanical Handling Exhibition.—F. E. Weatherill Limited, of Welwyn Garden City, Herts., is showing several new models on its stand at the Mechanical Handling Exhibition, Earls Court, London, which closes May 17. These include a general purpose loading shovel with conventional rear-wheel drive, and a front-wheel drive machine of otherwise similar type and size. In addition, an improved version of the Weatherill Hydraulic "S"-type industrial loader, together with the pedestrian-controlled Microloda mechanical shovel are on show. The Epping Auto-Shunter, a pneumatic-tyred shunting tractor, is also among the exhibits.

British Oxygen Extends Corby Factory.—British Oxygen Gases Limited is carrying out extensions to its factory at Corby, Northants. An equipment sales store is being erected, together with a medical gas filling shop and stores, an oxygen filling dock, a cylinder test shop and a garage for 17 vehicles. The buildings will occupy an area of 7,200 sq. ft., and the estimated cost is some £45,000. It is anticipated that work will be completed by the end of May. The architect and main contractor is British Oxygen Engineering Limited, heating installations are being undertaken by Lorne, Stewart Limited and the electrical contractor is Thorn & Hoddle Limited. Features of the buildings include glass fibre roof lights and a double-sheeted asbestos roof.

Houseman & Thompson Publishes House Journal.—Houseman & Thompson Limited, water treatment specialists of Newcastle upon Tyne, 2, has commenced publication of a house journal, The H. & T. News. This publication is in the form of a newspaper produced by its Dutch company in co-operation with the head office at Newcastle. It will be pub-

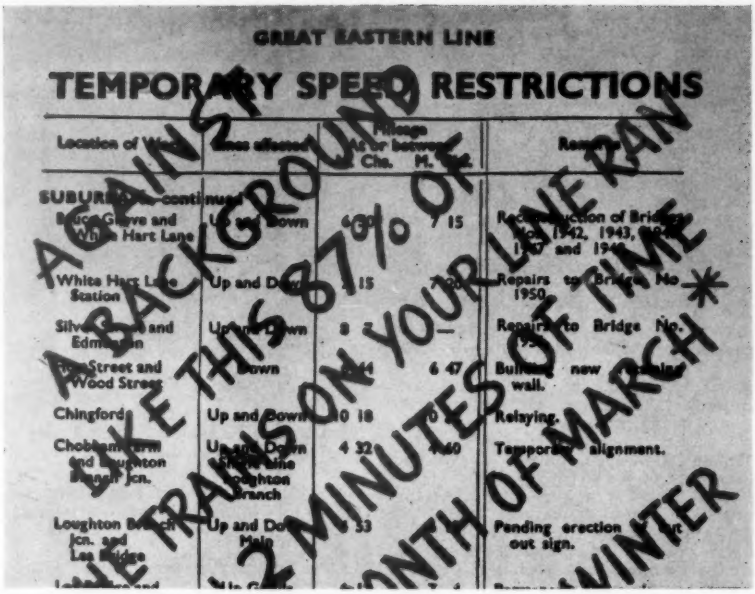


The teams after the annual golf match between members of the Coras Iompair Eireann and G.W.R. (London) Golfing Societies on the steps of the Great Southern Hotel at Parknasilla

lished quarterly and will provide a link for the International Organisation, and a means of keeping overseas agents and customers up to date with the latest developments. Copies of the publication may be obtained from the Information Department, Houseman & Thompson Limited, D.M. House, Jesmond Road, Newcastle upon Tyne, 2.

British Oxygen at Olympia.—The range of its services to the petroleum, chemical, gas and steel industries will be shown by British Oxygen Engineering Limited and its associated sales company British Oxygen Linde Limited on their stand at the Chemical & Petroleum Exhibition at Olympia, London, W., on June 18-28. Prominence will be given to plant used for the supply of high-purity oxygen and nitrogen in tonnage form. Smaller plants which have capacities of 100 cu. ft. of gas per hr. and upwards will also be illustrated.

Informing Public of Operating Difficulties.—To keep the public informed as to the operating difficulties caused by engineering works preliminary to electrification of lines in the London suburban area, the Great Eastern Line of British Railways, Eastern Region, has issued two posters. One explains the problem. The other, part of which is reproduced in the accompanying illustration, shows a reproduction of a page from a speed restriction booklet overprinted with the words "Against a background like this 87 per cent. of the trains on your line ran within two minutes of time during the month of March—and despite winter weather too!"



Part of Eastern Region poster showing some speed restrictions in force, with overprinting giving details of passenger train performance

British Wagon Co. Ltd. Results.—Financial results for 1957 of the British Wagon Co. Ltd. show that the net earnings of the Group were £865,590 and the net profit, after taxation, was £180,083, which compares with £229,217 for 1956. A total dividend on paid up capital of 20 per cent has already been made, and no further dividend will be recommended. The reduction of profit was forecast last year and was caused considerably by a decrease of £2,000,000 in hire purchase investment during 1956. This was largely a result of Government restrictions on hire purchase and partly as a result of the Suez Crisis.

Surfard Limited at the Production Exhibition.—Three interesting examples of the Peddinghaus system of controlled flame-hardening of oxy-town gas are to be shown on the stand of Surfard Limited, at the forthcoming Production Exhibition. This is to be held at Olympia, London, from May 12-21. These machines are suitable to be built into the production line, saving transportation to and from a hardening shop. Close control of the process is achieved by flow-meter and pressure gauge units so that consistent results are obtained throughout long runs. Record cards for each type of component enable the correct conditions to be repeated at any time, thus saving the scrapping of components through experimentation.

Electricity in Mechanical Handling.—"Variable speed with automatic control is a step towards automation," is the theme of the Electrical Development Association stand at the Mechanical Handling Exhibition at Earl's Court, London, which closes on May 17. The exhibits, which are in operation, consist of a selection of some of the many methods available of obtaining variable speed drives in industry. The main exhibit is a section of a rolling mill drive, consisting of a stator-fed variable speed a.c. motor which can be adjusted in speed over a wide range under all loads without brush movement, by means of an induction regulator; and floating type low frequency motors (three cycles at 55 V.) to provide direct drive at 60 r.p.m., without recourse to mechanical gearing.

Tube Investments Interim Dividend.—Tube Investments Limited has declared a tax free interim dividend on the ordinary stock of 7½ per cent for the year ended July 31, 1958.

New Enquiry Office at Aberdeen Station.—The enquiry office at Aberdeen Station, British Railways, Scottish Region, opened recently by Sir Ian Bolton, Chairman of the Scottish Area Board, replaces the wooden structure at the south end of the station. The panelling and counters are of light oak, figured veneer, and the floor is of Vinyl asbestos tiles. Lighting is by shadowless, combined fluorescent and tungsten light fittings and heating by concealed radiators.

British Road Services Strike.—Some 700 of the 800 British Road Services parcels staff, who had been on strike because new type of vehicles were introduced involving changed pay rates, returned to work on May 3. The remainder went back to work on May 5. The dispute began at the B.R.S. trunk haulage depot at Waterden Road, Hackney, London, on April 30.

Fredk. Town Radial Drilling Machines to be Produced in Australia.—McPherson's Limited, which already manufacture in Australia a range of centre lathes and other machine tools, has begun production of radial drilling machines produced by Fredk. Town & Sons Ltd. The first



Enquiry office at Aberdeen Station, looking towards passenger concourse

of the Town range to be produced in Australia is the Model A.E.5 42-in. sensitive radial drilling machine. All the drills will be known as Macson-Town machines.

Hydraulic Bender Part-Exchange Scheme.—Chamberlain Industries Limited of London, E.10, announces that it has introduced a part-exchange service which permits users of Staffa portable 2-in. capacity two-stage hand-operated hydraulic tube bending machines to exchange their existing pump and ram units for reconditioned units. The manufacturer states that these will be obtainable from local appointed stockists throughout the country. Where only slight adjustment is required to relatively new units, or where it is a case of the unit requiring the usual annual overhaul, it would be more economical to return the units to the Leyton works, it is stated.

Midland Railway Company of Western Australia Limited.—The net loss of the Midland Railway Company of Western Australia Limited for the year ended June 30, 1957, was £60,097 (£49,187) before interest on second mortgage debenture. Interest payable on debenture stock is £23,694 (same), which, although not provided in the accounts and not presently payable because of lack of profits for the year, remains payable out of future profits.

Churchill Machine Tool Company Results.—The net profit for the year ended 1957 of the Churchill Machine Tool Co. Ltd. was £344,564 which compares with £345,446 for the previous year. The dividend was 27½ per cent (22½ per cent equivalent). Current assets were £2,923,905 (£2,756,040) and liabilities £651,250 (£657,128). Capital reserves were alloted £310,947 (£310,644), revenue reserves £723,157 (£813,128), and £324,286 (£342,635) was allocated for future tax.

Reduced Rates for Motorcars to Newcastle and York.—Motorcar conveyance facilities have been extended by the Scottish Region of British Railways. Reduced rates have been introduced between Perth or Edinburgh and Newcastle or York and the charges include rail conveyance of the car and second class travel for the driver. Passengers accompanying the motorist will pay normal fares. Times of departure and arrival will be arranged to suit the needs of motorists according to the requirements of each journey.

Instrument Company for Philips Equipments.—From May 1, an instrument company, Research & Control Instruments Limited, Instrument House, 207, Kings Cross Road, London, W.C.1 (telephone no Terminus 8444), will become the sole distributors in the United Kingdom for the electronic instruments and scientific equipment hitherto marketed by Philips Electrical Limited (Research & Control Instruments Division). The company will assume full responsibility for the maintenance of existing Philips equipment and its field staff will be supported from a new Service Department and Stores located at 49, Temperley Road, Balham, London, S.W.12 (telephone no. Battersea 9166 and 9197). It will, in addition, become the distributors in Great Britain for the industrial X-ray equipment manufactured by C. H. F. Müller A.G., Hamburg, for Norelco (U.S.A.) X-ray diffraction and spectrographic equipment, and for the sale and servicing of Mullard electronic measuring instruments and electrochemical apparatus.

Forthcoming Meetings

May 10 (*Sat.*).—Permanent Way Institution, Leeds & Bradford Section. Visit to the Forth Bridge and a modern marshalling yard near Edinburgh.

May 10 (*Sat.*) to May 18 (*Sun.*).—Railway Students' Association, annual convention in Switzerland.

May 12 (*Mon.*) to May 15 (*Thu.*).—Institution of Locomotive Engineers. Summer meeting in Northern Ireland and Eire.

June 3 (*Tue.*). to June 6 (*Fri.*).—Institute of Transport. 1958 Congress in Dublin.

June 5 (*Thu.*).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Talk on "Famous railway accidents," by Mr. T. S. Lascelles.

June 6 (*Fri.*).—The Railway Club, at Royal Scottish Corporation, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Hastings direct line," by Mr. D. Cullum.

June 7 (*Sat.*) to June 12 (*Thu.*).—Permanent Way Institution Summer Convention at Weston-super-Mare.

Railway Stock Market

Sentiment in stock markets was affected by the London bus strike and by the news of increased wage demands in other industries. Consequently, neither British Funds nor industrial shares showed response to the good impression created by the latest increase in the sterling area's gold and dollar reserves which now amount to over £1,000,000,000 and are at their highest since November, 1954. This is a fine achievement, and had it not been for the bus strike, there is no doubt stock markets would have shown good response, because the level of the reserves would appear to give every reason to expect that the bank rate should go down to 5 per cent in the near future.

Once again movements in foreign rails were small and indefinite in character because very little business was in evidence. Antofagasta ordinary stock, which offers a yield of no less than 22 per cent, assuming last year's 4 per cent dividend were maintained, have strengthened to 17½, which compares with 17¼ a week ago. On the other hand, the preference stock receded in price from 35 to 34½: yield in this case is fully 14 per cent. Business at 37½ was recorded in Chilean Northern first debentures and in Costa Rica ordinary stock at 17½, while Paraguay Central 6 per cent debentures have changed hands up to 13.

In other directions, United of Havana second income stock changed hands rather more actively and strengthened to 6, while business in the consolidated stock was around 1½. San Paulo Railway 3s. units firmed up to 2s. 4½d., and elsewhere Mexican Central "A" bearer debentures have been better at 66½.

Canadian Pacifics were helped by a somewhat better trend by Wall Street markets, and at $46½ compared with $46¼ a week ago. White Pass strengthened from $13½ to $14. Nyasaland Railways shares were dealt in at 9s. 9d.

G. D. Peters, which remained under the influence of the chairman's annual statement, were again bought and rose further to 32s. 9d. which compares with 31s. 3d. a week ago. N.B. Locomotive at 13s. moved 3d. easier as compared with a week ago, while Birmingham Carriage remained at 16s. 10½d. The firmer tendency continued in Beyer Peacock 5s. shares, which at 8s. 4½d. xd yield nearly 9 per cent on the basis of last year's 16 per cent dividend, but Westinghouse Brake at 38s. were less firm than a week ago. In other directions, Gloucester Wagon 10s. shares have changed hands around 14s. 9d. and Wagon Repairs 5s. shares around 11s. 4½d. Charles Roberts 5s. shares again changed hands around 8s. English Electric reflected the easier trend in stock markets, easing to 54s. 9d. and General Electric moved back to 31s. 9d., but there was a sharp rally to 20s. 9d. in Johnson & Phillips and Henleys 10s. shares have been better at 13s. following publication of the financial results. B.I. Cables were 44s. 4½d., but elsewhere, T. W. Ward at 74s. 9d. lost an earlier rise, and best levels were not quite held by Alfred Herbert at 66s. 7½d. F. Perkins 10s. shares have changed hands around 10s. 7½d. There were sharp fluctuations in Associated Electrical, which moved back to 48s. 6d. but later showed a partial rally to 49s. 3d. following news of the purchase by the company of Associated Insulation Products from Elliott-Automation for the 1,155,555 Associated Electrical shares. These shares are to be acquired by Philip Hill Higginson & Company, and the effect of the deal will be to provide Elliott-Automation with some £2,700,000 cash and Associated Electrical with assets offering still further scope for expansion. The 10s. shares of the Dowty Group at 34s. 3d. lost a few pence of their recent rise, and Pressed Steel 5s. shares have been a little easier at 15s. 9d. Tube Investments came back to 52s. and elsewhere Guest Keen at 53s. 3d. were slightly lower despite the good impression created by the results showing higher profits and the raising of the dividend from 13½ per cent to 15 per cent. Vague talk in the market of a possible free scrip issue has not been confirmed.

OFFICIAL NOTICES

POTTERIES MOTOR TRACTION CO., LTD. Vacancy for GENERAL MANAGER. The Potteries Motor Traction Co., Ltd., invites applications for the appointment of GENERAL MANAGER of the Company in succession to Mr. C. W. Wroth, who will be retiring later in the year. The Company, with headquarters at Stoke-on-Trent, operates some 500 vehicles, mainly on stage carriage services in North Staffordshire, and has also a considerable coach business and other ancillary operations. Applications, which will be treated in strict confidence, should give full personal particulars including age and qualifications and set out the applicant's history and experience. They should be addressed to Mr. R. W. Birch, Chairman, The Potteries Motor Traction Co., Ltd., Stratton House, Piccadilly, London, W.1, to reach him not later than 29th May, 1958.

THE Director General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of:—700 LAMINATED BEARING SPRINGS for B.G. Railway Coaches. Forms of tender may be obtained from the above address on or after 9th May, 1958, at a fee of 10s., which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 26th June, 1958. Please quote Reference No. 3/58/DB/RLY.2.

THE Director General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of:—1,400 CAST STEEL ROLLER BEARING AXLEBOXES for B.G. Railway Coaches. Forms of tender may be obtained from the above address on or after 9th May, 1958, at a fee of 10s., which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 26th June, 1958. Please quote Reference No. 1/58/DB/RLY.2.

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